Traffic Flow Management System-to-Airline Operation Center Network (TFMS-to-AOCNET) Interface Control Document (ICD) for the Traffic Flow Management-Modernization (TFM-M) Program

TFM-M
Traffic Flow Management - Modernization

Final, Release 9

Contract Number: DTFAWA-04-C-00045
CDRL: E05

November 19, 2012

Prepared for:
U.S. Federal Aviation Administration

Prepared by:
CSC
North American Public Sector – Civil Group
15245 Shady Grove Road
Rockville, MD 20850

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INTERFACE CONTROL DOCUMENT APPROVAL SIGNATURE PAGE TFMS/AOCNET	
APPROVAL SIGNATURES	

PARTICIPANT	NAME	DATE

Document History Record

Release	Date	Comment
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Revised Draft	November 21, 2007	Revised draft, to include changes mandated by FAA comments. • TFMMP00002069 • TFMMP00003609 • TFMMP00004070
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Draft, Release 5	May 24, 2010	Contractual delivery. Addresses Release 5 Interface Design. This version reflects significant restructuring of the Release 3 Final Revision to improve the flow of information and also to enhance easy maintenance. • Added Appendix B in which ADL File Specification file is embedded as a document link. • Added Appendix C in which the CDM Message Protocol file is embedded as a document link. • Added UDP Bridging Update Message • Added UBRG to list of values for TYPE (Control Type) for Substitution Good Response Message.
Final, Release 5	August 5, 2010	Delivery to address FAA comments • Table 3-XIV: Clarified the definitions for the following Control Types: ABRG, ADPT, DAS, GAAP and RCTL • Revised ADL File Specification V 12.3 posted in Appendix B • Revised CDM Messages Protocol V 1.0 posted in Appendix C
Final, Release 5, Revision 1	March 1, 2011	Addresses the following CRs: • TFMMP00032363 • TFMMP00032463 • TFMMP00032688 • TFMMP00032861
Draft, Release 9	October 11, 2012	• Contractual delivery. Addresses Release 7 and 9 Interface Design. • Added Appendix D in which .the CTOP V3.0 ICD is attached as a document link.
Final, Release 9	November 19, 2012	• Revised to address FAA comments received.

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1   Scope

This section identifies the scope, purpose, and organization of this Interface Control Document (ICD) and identifies the subsystem responsibility list.

1.1   Scope and Purpose

This ICD provides the design characteristics of the interface between the Traffic Flow Management System (TFMS) and the various Collaborative Decision Making (CDM) clients via the Airline Operation Center Network (AOCNET).

This ICD satisfies the interface design requirements contained in the Traffic Flow Management System Interface Requirements Specification (IRS) for Traffic Flow Management Modernization (TFM-M), Release 7, Revision 5 July 28, 2011. The IRS is a companion document to the System/Subsystem Specification (SSS) for the Traffic Flow Management–Modernization (TFM-M) Program, Release WSD/CCSD Replacement, Revision 8.3, May 19, 2012. This ICD was prepared under guidance from FAA-STD-025e, dated August 9, 2002 and the TFMM-ENGR-05(E05), Traffic Flow Management Modernization (TFM-M), Data Item Description (DID) for ICDs.

The purpose of this ICD is to specify:

- Interface connectivity between TFMS and CDM clients via the AOCNET

- Format of CDM data transmitted between CDM clients and TFMS via the AOCNET

1.2   Subsystem Responsibility List

The following list provides the TFMS external system interface and identifies the responsible Federal Aviation Administration (FAA) organizations:

- TFMS - FAA-ATO-R

- AOCNET - FAA-ATO-R

1.3   Document Organization

This ICD is organized in six sections and two appendices:

Section 1, **Scope**, describes the purpose and scope of this ICD.

Section 2, **Applicable Documents**, provides a listing of referenced government and non-government documents, and document sources researched and used by this ICD.

Section 3, **Interface Characteristics**, identifies and describes the general characteristics, functional design, and physical design characteristics for this ICD.

Section 4, **Verification Provisions**, contains verification provisions for this ICD.

Section 5, **Preparation for Delivery**, contains any specific preparations required by this ICD.

Section 6, **Notes**, provides a list of definitions, abbreviations, and acronyms used in this ICD.

Appendix A, **Error Codes and Messages,** provides a list of the error codes and messages generated by the TFMS when one or more errors are detected in a message received from an AOCNET client.

Appendix B, **ADL & FSM Broadcast File Format Specifications**, provides detailed descriptions of the ADL and FSM Broadcast files.

Appendix C, **CDM Message Protocol**, details the application, connectivity and the protocols used by TFMS to exchange messages via the CDM participant (AOCNET, FSM, and ARINC) client interface.

Appendix D, **Interface Control Document for CTOP**, provides a detailed description of all CTOP messages and their data formats.

2   Applicable Documents

The following documents form part of this ICD to the extent specified herein.

2.1   Government Documents

FAA Standards:

FAA-STD-025e   Preparation of Interface Documentation,
                         August 9, 2002

FAA-STD-039b   Open Systems Architecture and Protocols, May 1, 1996

FAA-STD-043b   Open System Interconnect Priority, 1996

FAA-STD-045   OSI Security Architecture, Protocol and Mechanisms,
                         1994

FAA Orders:

FAA Order 1830.2   Telecommunication Standards, Selection and
                         Implementation Policy, August 1987

FAA Order 1370.82A   Information Systems Security Program, September 11,
                         2006

National Airspace System (NAS) Documents:

NAS-IR-24032410   Enhanced Traffic Management System (ETMS)
                         Interface Requirements Document (IRD) for Traffic
                         Flow Management Infrastructure (TFMI), Revision A,
                         September 16, 2005

NAS-IR-241400001   Traffic Flow Management System (TFMS) Interface
                         Requirements Document (IRD) for Traffic Flow
                         Management Modernization (TFM-M) Version 1.0,
                         August 14, 2006

NAS-MD-311   National Airspace System En Route Configuration
                         Management Document, Computer Program Functional
                         Specifications: Message Entry and Checking,
                         ModelA5f1.5, October 4, 2004

Request For Comments (RFC) Documents:

RFC 791   Internet Protocol, Sep 1981

RFC 793   Transmission Control Protocol, Sep 1983

RFC 2616   Hypertext Transfer Protocol -- HTTP/1.1, June 1999

RFC 3076   Canonical XML Version 1.0, Mar 2001

Other Government Documents:

CDM Memorandum	CDM Message Formats Version 2.3, February 22, 2006
CDM Memorandum	Protocol for Submission of Early Intent Messages to ETMS, Version 1.3, November 3, 2003
CSC/TFMM-04/0025	System/Subsystem Specification (SSS) for the Traffic Flow Management–Modernization (TFM-M) Program, Release WSD/CCSD Replacement, Revision 8.3, May 19, 2012
CSC/TFMM-11/1431	Final System Security Plan (SSP) – Fiscal Year (FY) 2012 for Traffic Flow Management–Modernization (TFM-M), January 25, 2012
CSC/TFMM-05/0121	Interface Requirements Specification (IRS) for the Traffic Flow Management – Modernization (TFM-M) Release 7, Revision 5, July 28, 2011
CSC/TFMM-10/1077	Advisories and General Messages Specification, Version 1.3, November 16, 2012
CSC/TFMM-10/1077	TFMS ICD for Substitutions during GDPs, GSs and AFPs, Version 3.3, January 10, 2011
CSC/TFMM-11/1397	Traffic Flow Management System-to-Weather Services International (TFMS-to-WSI) Interface Control Document (ICD), Release 7, Final, November 11, 2011
CSC/TFMM-08/0473	Traffic Flow Management System-to-Aircraft Situation Display to Industry (TFMS-to-ASDI) Interface Control Document (ICD), Release 3, Final, Revision 1, March 15, 2010
CSC/TFMM-08/0473	Traffic Flow Management System-to-Runway Visual Range Data Feed (TFMS-to-RVRDF) Interface Control Document (ICD), Release 3, Final, August 24, 2009
CSC/TFMM-07/0286	Traffic Flow Management System-to-Surface Movement Advisor (TFMS-to-SMA) Interface Control Document (ICD), Final, May 13, 2008
CSC/TFMM-08/0473	Traffic Flow Management System-to-Traffic Flow Management Data to Industry (TFMS-to-TFMDI) Interface Control Document (ICD), Release 3, Final, August 24, 2009

FCM-H1-2005	Federal Meteorological Handbook No 1: Surface Weather Observations and Reports, September 1, 2005
Metron Aviation ICD	FSM / Autosend Server Communications Interface, Version 1.2, June 28, 2005
TFMM-ENGR-05(E05)	Traffic Flow Management Modernization (TFM-M), Data Item Description (DID), undated
WMO Publication No.306	The WMO Manual on Codes: WMO Publication No. 306, Volume I, Part B: 1998 Edition
WSOM	Weather Service Operations Manual (WSOM), Chapter D-31, Aviation Terminal Forecasts, June 6, 1997

2.2 Non-Government Documents

International Organization for Standardization (ISO):

ISO/IEC 15445:2000(E)	Information Technology — Document Description and Processing Languages — HyperText Markup Language (HTML), Corrected version 2003-04-23.
ISO/IEC 7498-1	Information Processing Systems – Open Systems Interconnect – Basic Reference Model, 1993

Institute of Electrical and Electronics Engineers (IEEE):

IEEE 802.3	IEEE Standard for Information Technology — Telecommunications and Information Exchange Between Systems, 2000

American National Standards Institute (ANSI):

ANSI X3.4	American National Standard Code for Information Interchange (ASCII), REV. 1992

2.3 Document Sources

This subsection provides sources for FAA and International Organization for Standardization (ISO) documents.

2.3.1 Source of FAA Documents

Copies of FAA specifications, standards, and publications may be obtained from the Contracting Officer, Federal Aviation Administration, 800 Independence Avenue S.W., Washington, DC, 20591. Requests should clearly identify the desired material by number and date and state the intended use of the material.

2.3.2 Request for Comment (RFC) Documents

RFC documents are available from the reference area electronically at the following Web address:

http://www.faqs.org/rfcs/

2.3.3   ISO, IEEE, and ANSI Documents

Copies of ISO, IEEE, and ANSI standards may be obtained from the American National Standards Institute, 11 West 42nd Street, New York, NY, 10036.

3 Interface Characteristics

This section provides the general, functional, and physical interface characteristics for the TFMS interface with AOCNET.

3.1 General Characteristics

The TFMS-to-AOCNET interface provides a means for communication of required data between TFMS and Collaborative Decision Making (CDM) Participants, including NAS users.

A NAS user is an airline, air carrier, air freight, military, or general aviation/business aviation operator. A CDM Participant is a NAS user who has been authorized by the FAA to participate in Collaborative Decision Making. A CDM Participant must have connectivity to TFMS. This is done through one of the two ways shown below:

1. Airline Operations Center Network Wide Area Network (AOCNET WAN)

    (maintained by ARINC (Aeronautical Radio Inc.)), or

2. An Internet Protocol (IP) network communications service using a Virtual Private

    Network (VPN) over the INTERNET via the FTI NAS Enterprise Security

    Gateway (NESG)

The TFMS-to-AOCNET interface provides a means for communication of the following specific types of data / messages between TFMS and CDM Participants:

- Collaborative Decision Making (CDM) data; including, CTOP generated controlled departures times (EDCTs)
- CTOP Messages
- Aircraft Situation Display to Industry (ASDI) data[1]
- Runway Visual Range Data Feed (RVRDF) data[2]
- Traffic Flow Management Data to Industry (TFMDI) data[3]
- Surface Movement Advisor (SMA) data[4]

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[1] CDM Participants can receive ASDI data using the physical AOCNET connectivity, but this data transfer makes use of ASDI Clients and interface protocols specific to ASDI. Refer to the ASDI ICD for complete details.
[2] CDM Participants can receive RVRDF data using the physical AOCNET connectivity, but this data transfer makes use of RVRDF Clients and interface protocols specific to RVRDF. Refer to the RVRDF ICD for full details.
[3] CDM Participants can receive TFMDI data using the physical AOCNET connectivity, but this data transfer makes use of TFMDI Clients and interface protocols specific to TFMDI. Refer to the TFMDI ICD for full details.
[4] CDM Participants can receive SMA data using the physical AOCNET connectivity, but this data transfer makes use of SMA Clients and interface protocols specific to SMA. Technically, the SMA server is outside the TFMS boundary. CDM participants are interfacing the SMA server directly, and not interfacing a TFMS component. Refer to the SMA ICD for full details.

Figure 3-1, TFMS to AOCNET Interface Block Diagram, illustrates the TFMS to AOCNET interfaces and the demarcation point. The TFMS-TO-AOCNET interface is application-to-application. The top part of the diagram illustrates the connectivity using the Virtual Private Network (VPN) over INTERNET service via the National Airspace System (NAS) Enterprise Security Gateway (NESG). The bottom half illustrates the AOCNET WAN connection. Note – the demarcation point is illustrated in the Figure by a black dot.
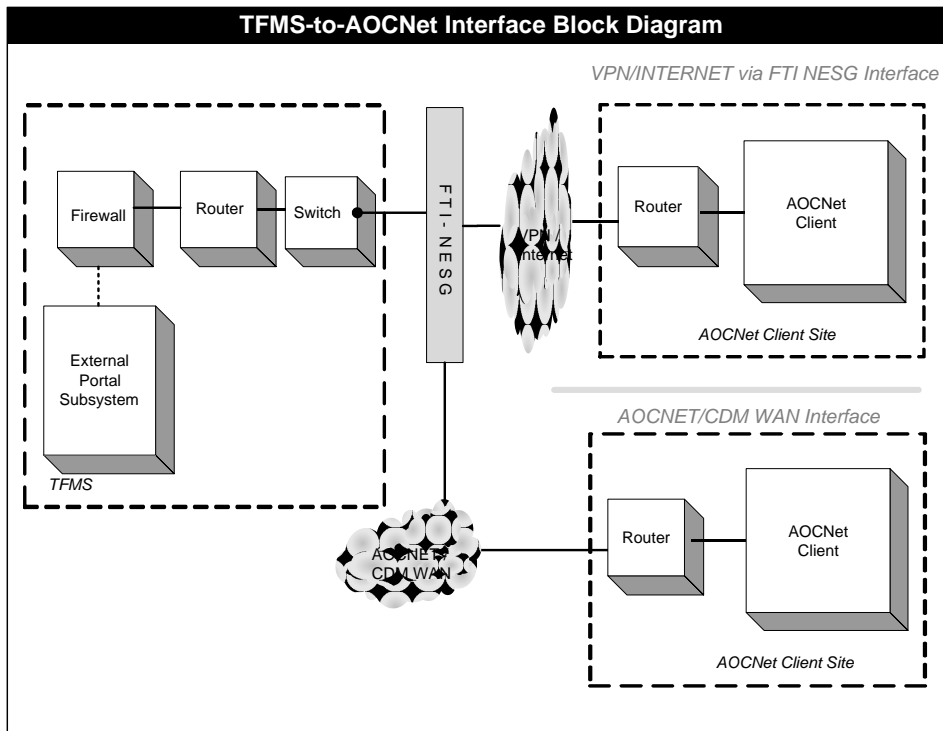
Figure 3-1. TFMS-to-AOCNET Interface Block Diagram

The point of demarcation between TFMS and AOCNET in either case is at the TPC switch. Refer to Section 3.3 for details on the physical structure of the TFMS-to-AOCNET interface.

3.2 Functional Design Characteristics

This subsection describes the functional design characteristics of the TFMS and AOCNET (AOCNET WAN and VPN/INTERNET via FTI NESG) interface, including the services provided by the interface, data formats, error handling, protocols, and security.

3.2.1 Application Processes (APs)

This subsection identifies each application process and the applicable services, including performance characteristics (information units, quality of service, error handling, and responses).

3.2.1.1 Identification of Application Processes

The TFMS uses an AP called the External Portal Message Interface Server within the External Portal Subsystem to transfer data to and from AOCNET.

Each AOCNET Client provides its own connectivity APs, simply designated as AOCNET Client AP in this ICD.

3.2.1.2 Category of Services Required by the AP

CDM Participants use AOCNET or VPN/INTERNET via NESG to provide secure, reliable high speed communications with TFMS.

As stated in the previous section, the TFMS-to-AOCNET interface provides for the exchange of the following types of application data and messages:

- CDM – Detailed in this ICD

- ASDI – Detailed in CSC/TFMM-08/0473, Traffic Flow Management System-to-Aircraft Situation Display to Industry (TFMS-to-ASDI) Interface Control Document (ICD)

- RVRDF – Detailed in CSC/TFMM-08/0473, Traffic Flow Management System-to-Runway Visual Range Data Feed (TFMS-to-RVRDF) Interface Control Document (ICD),

- TFMDI – Detailed in CSC/TFMM-08/0473, Traffic Flow Management System-to-Traffic Flow Management Data to Industry (TFMS-to-TFMDI) Interface Control Document (ICD)

- SMA - Detailed in CSC/TFMM-07/0286, Traffic Flow Management System-to-Surface Movement Advisor (TFMS-to-SMA) Interface Control Document (ICD)

Note: Although the TFMS-to-AOCNET interface supports the five types of data listed above, this ICD addresses only the transfer of CDM data since the protocols involved in the exchange of CDM data on this interface are unique to the TFMS-to-AOCNET interface.

Loss of the TFMS-to-AOCNET interface will impair full system operation, but will not degrade TFMS operations to the point of inoperability.

In support of CDM data exchange, CDM Participants utilize application sessions between processes at the various sites and the TFMS TPC, which are provided through dedicated TCP/IP sockets. There is a unique socket connection established for each session. In each session, the application running at the user site is considered the client and the application running at the TFMS is considered the server. For the remainder of this ICD, CDM Participants communicating with the TFMS either using the AOCNET WAN or the VPN/INTERNET will be referred to as AOCNET clients.

The establishment and management of the sessions outlined above can be summarized as follows (Refer to Section 3.2.2.1 for full details of sessions):

1. A client process opens a socket connection to a server process using a designated IP address. This starts a session.

2. Data is exchanged between the client and server indefinitely.

3. Either the client or server terminates the session and closes the connection.

In support of CDM data exchange, four types of sessions are provided (with the available data per session bulleted underneath):

1. Aggregate Demand List (ADL) Sessions

    a. Aggregate Demand List (ADL) files

    b. Ground Delay Program (GDP/AFP/GS/COMP/BLKT) parameters

    c. Weather Observations (METAR) and Terminal Aerodrome Forecasts (TAF)

    d. Flight Status Monitor (FSM) Broadcast messages

2. Flight Data (FD) Sessions

    a. Flight Create (FC) messages

    b. Flight Modify (FM) messages

    c. Flight Cancel (FX) messages

    d. Early Intent (EI) messages

3. Simplified Substitution (SS) Sessions

    a. Flight Modify (FM) messages

    b. Flight Cancel (FX) messages

    c. Slot Credit Substitution (SCS) messages

   d. Slot Create (SC) messages

   e. Hold All Slots messages

   f. Release All Slots messages

   g. Report Requests/Replies and Bridging messages

   h. Unsolicited messages (includes Slot List)

4. CTOP Session

   a. CTOP FCA messages

   b. CTOP Trajectory messages

   c. CTOP TMI messages

   d. CTOP Substitution messages

For ADL sessions, once the client has opened a socket connection, the client must send an initial connect message identifying itself; the server uses this information to validate the connection. Additional messages are used to notify client/server of a shutdown.

For Flight Data sessions, the session can be opened and closed simply by opening and closing the socket connection. The client just opens a socket and begins sending messages (i.e., a connection message is not required, but can optionally be utilized). Each message contains client information that is used by the server to validate the connection.

For Simplified Substitution sessions, the session can be opened and closed simply by opening and closing the socket connection. The client just opens a socket and begins sending messages (i.e., a connection message is not required, but can optionally be utilized). With Simplified Subs, the first application message may be from the server to the client. If the client is not intending to send the first application message, then by convention once the client has opened a socket connection, the client must send an initial connect message identifying itself; the server uses this information to validate the connection. The same connect message used for ADL sessions is used for this purpose, with the exception that the connect message identifies the session as a Simplified Subs session rather than an ADL session.

The client can optionally receive messages in a SS session that provide EDCTs that have been assigned to their flights by CTOP TMIs. The SS session CTOP EDCT data is not intended to provide the full set of CTOP assignment data that is available in a CTOP session.

CTOP sessions are described in detail in Section 3.2 of the CTOP ICD provided under Appendix D.

For each type of session, the session could range from a single message sent and reply returned or months of continuous data exchange.

3.2.1.2.1 Application Services

Table 3-I summarizes the CDM application messages that are exchanged on the TFMS-to-AOCNET interface. In support of CDM sessions, the TFMS-to-AOCNET interface utilizes Session Protocol messages to manage the sessions as well as to provide for specific application message transfer. These protocol messages are listed in Table 3-XLVIII and are detailed in Appendix C, CDM Message Protocol. The application messages are detailed in Sections 3.2.1.3.2.1 through 3.2.1.3.2.22.

3.2.1.3   Information Units

This subsection describes the formats of the CDM data transferred between AOCNET clients and TFMS.

3.2.1.3.1 Information Code

All CDM interface messages are encoded in American Standard Code for Information Interchange (ASCII) alphanumeric data format in accordance with ANSI X3.4, American National Standard Code for Information Interchange (ASCII), REV. 1992, and are described in Section 3.2.1.3.2, and the appropriate subsections.

3.2.1.3.2 Information Structure

The following subsections provide the detailed record layout of the CDM application messages supported by the AOCNET interface. Table 3-I, CDM Application Message Summary, summarizes the CDM application messages supported by the AOCNET interface, including the subsection reference, what type of session they occur in, and mnemonic.

Table 3-I. CDM Application Message Summary

Product Name	Product Mnemonic	Session Type	ICD Subsection
Aggregate Demand List	ADL	ADL	3.2.1.3.2.1
FSM Broadcast Request	--	ADL	3.2.1.3.2.2
FSM Broadcast Reply	--	ADL	3.2.1.3.2.3
FSM Broadcast Message	FBCM	ADL	3.2.1.3.2.4
Meteorological Aviation Reports	METAR	ADL	3.2.1.3.2.5
Terminal Aerodrome Forecasts	TAF	ADL	3.2.1.3.2.6
Flight Create Messages	FC	Flight Data	3.2.1.3.2.7.1
Flight Modify Messages	FM	Flight Data Simplified Subs	3.2.1.3.2.7.2

Product Name	Product Mnemonic	Session Type	ICD Subsection
Flight Cancel Messages	FX	Flight Data Simplified Subs	3.2.1.3.2.7.3
Flight Data Message Responses	N/A	Flight Data	3.2.1.3.2.7.4
Early Intent Messages	EI	Flight Data	3.2.1.3.2.8
Slot Credit Substitution Messages	SCS	Simplified Subs	3.2.1.3.2.10
Slot Create Message	SC	Simplified Subs	3.2.1.3.2.11
Hold All Slots Message	HOLD ALL SLOTS	Simplified Subs	3.2.1.3.2.12
Release All Slots Message	RELEASE ALL SLOTS	Simplified Subs	3.2.1.3.2.13
Substitution Message Responses	N/A	Simplified Subs	3.2.1.3.2.14
Report Requests	N/A	Simplified Subs	3.2.1.3.2.15
Estimated Departure Clearance Time List	EDCT LIST	Simplified Subs	3.2.1.3.2.16
Estimated Departure Clearance Substitution Status	EDCT SUB SHOW	Simplified Subs	3.2.1.3.2.17
Estimated Departure Clearance Time Slot List	EDCT SLIST	Simplified Subs	3.2.1.3.2.18
Estimated Departure Clearance Time Unassigned Slots	EDCT UNASSIGNED SLOTS	Simplified Subs	3.2.1.3.2.19
Bridging On Message	EDCT BRIDGING ON	Simplified Subs	3.2.1.3.2.20
Bridging Off Message	EDCT BRIDGING OFF	Simplified Subs	3.2.1.3.2.21
Slot List Message	N/A	Simplified Subs	3.2.1.3.2.22.1
Substitution Status Message*	N/A	Simplified Subs	3.2.1.3.2.22.2
GDP Termination Message*	N/A	Simplified Subs	3.2.1.3.2.22.3
EDCT Update Message*	N/A	Simplified Subs	3.2.1.3.2.22.4
Delay Assignment (DAS) Delay Message*	DAS	Simplified Subs	3.2.1.3.2.22.5
General Aviation Airport Programs Slot Assignment Message*	GAAP	Simplified Subs	3.2.1.3.2.22.6
SCS Bridging Update Message*	N/A	Simplified Subs	3.2.1.3.2.22.7
UDP Bridging Update Message*	N/A	Simplified Subs	3.2.1.3.2.22.8
ECR Update Message*	N/A	Simplified Subs	3.2.1.3.2.22.9
SCS Status Message*	N/A	Simplified Subs	3.2.1.3.2.22.10
Drop-out Flight Message*	N/A	Simplified Subs	3.2.1.3.2.22.11

Product Name	Product Mnemonic	Session Type	ICD Subsection
Recontrol Message*	N/A	Simplified Subs	3.2.1.3.2.22.12
Substitution Message*	N/A	Simplified Subs	3.2.1.3.2.22.13
Hold/Release All Slots Message*	N/A	Simplified Subs	3.2.1.3.2.22.14
Timeout Cancelled Flights Message*	N/A	Simplified Subs	3.2.1.3.2.22.15
Reinstated Flight Message*	N/A	Simplified Subs	3.2.1.3.2.22.16
Flight ID Change Message*	N/A	Simplified Subs	3.2.1.3.2.22.17
Diversion Cancel/Diversion Recoveries Message*	N/A	Simplified Subs	3.2.1.3.2.22.18
Adaptive Compression Update Message*	N/A	Simplified Subs	3.2.1.3.2.22.19
Scope Reduction Message*	N/A	Simplified Subs	3.2.1.3.2.22.20
EDCT Adaptive Compression On Message*	N/A	Simplified Subs	3.2.1.3.2.22.21
EDCT Adaptive Compression Off Message*	N/A	Simplified Subs	3.2.1.3.2.22.22
CTOP FCA*	N/A	CTOP	Appendix D.4.2, Appendix D.5.3.2
CTOP FCA List Request	N/A	CTOP	Appendix D.4.2, Appendix D.5.3.2
CTOP FCA List Reply	N/A	CTOP	Appendix D.4.2, Appendix D.5.3.2
CTOP FCA Re-Synch Request	N/A	CTOP	Appendix D.4.2, Appendix D.5.3.2
CTOP FCA Re-Synch Reply	N/A	CTOP	Appendix D.4.2, Appendix D.5.3.2
CTOP FCA Flight List Request	N/A	CTOP	Appendix D.4.2, Appendix D.5.3.2
CTOP FCA Flight List Reply	N/A	CTOP	Appendix D.4.2, Appendix D.5.3.2
CTOP FCA Request Error	N/A	CTOP	Appendix D.4.2, Appendix D.5.3.2
CTOP FCA Delete*	N/A	CTOP	Appendix D.4.2, Appendix D.5.3.2

Product Name	Product Mnemonic	Session Type	ICD Subsection
CTOP TOS Message	N/A	CTOP	Appendix D.4.3, Appendix D.5.3.3
CTOP TOS Reply	N/A	CTOP	Appendix D.4.3, Appendix D.5.3.3
CTOP TOS Error	N/A	CTOP	Appendix D.4.3, Appendix D.5.3.3
CTOP TOS Re-Synch Request	N/A	CTOP	Appendix D.4.3, Appendix D.5.3.3
CTOP TOS Re-Synch Reply	N/A	CTOP	Appendix D.4.3, Appendix D.5.3.3
CTOP TOS Re-Synch Error	N/A	CTOP	Appendix D.4.3, Appendix D.5.3.3
CTOP TMI*	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Trajectory Assignment*	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Pop-up*	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Drop-out*	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP List Request	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP List Reply	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Re-Synch Request	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4

Product Name	Product Mnemonic	Session Type	ICD Subsection
CTOP Re-Synch Reply	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Re-Synch Error	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Trajectory Assignment Re-Synch Request	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Trajectory Assignment Re-Synch Reply	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Trajectory Assignment Re-Synch Error	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Cancel*	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Flight Plan Amendment*	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Suspend*	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Resume*	N/A	CTOP	Appendix D.4.4, Appendix D.5.3.4
CTOP Substitution Message	N/A	CTOP	Appendix D.4.5, Appendix D.5.3.5
CTOP Substitution Reply	N/A	CTOP	Appendix D.4.5, Appendix D.5.3.5
CTOP Substitution Error	N/A	CTOP	Appendix D.4.5, Appendix D.5.3.5

* Note: These messages are sent as unsolicited messages.

The following syntax rules are used for field specifiers in the standard ASCII Tables following the following subsections. Below these rules are the conventions for XML entries.

- L – represents one upper-case letter in ASCII

- d – represents one numeric digits in ASCII

- a – represents one alphanumeric (either number or upper-case letter) in ASCII

- [] – means the characters enclosed are optional. Any characters not within brackets are required. For example, Ldd [aa] would indicate an upper-case letter, followed by two digits, and then zero, one, or two optional alphanumeric characters.

- **BOLD** indicates a static entry.

- *ITALIC* entries are optional to the message

- All times, unless specified will be in DayDayhourhourminuteminute (*DDhhmm*) format

- The files contain only printable ASCII characters.

- The file format follows standard XML structural conventions.

- In XML terminology, the files are guaranteed to be:

o Valid – The XML file content matches the proper schema and documentation.

o Well-Formed – This indicates every opening tag (i.e., - <TAG>) has a corresponding closing tag (i.e., - </TAG>), opening and closing tag pairs are correctly matched and nested, and consistent capitalization is used. Note - The first line of every file is the standard "**<?XML ...>**" entry, identifying the XML version number. This is the only tag which has no corresponding close tag.

o Simple - Only a simple subset of XML is used. All data is between matching start and end tags:

```
<TAG>data</TAG>
```

The files do not contain data in any other XML form. For example, composite tags (e.g., <TAG="data"/>) and attributes are never used.

Note - New-line characters between matching start and end tags are part of the element's data.

o <u>Structured</u> – The XML file consists of *data element* (or simply an element), consisting of a pair of matching start and end tags, together with the data between them. Elements can contain other elements, and are referred to as a *container*. The container element is considered to be the '*parent*' to the elements contained within, or '*child*'. Example:

```
<CTR_ROUTE>
     <CTR_SEG>...</CTR_SEG>
</CTR_ROUTE>
```

Characters that are not between matching start and end tags are ignored, . They are used occasionally for comments or enhancements of clarity. Example:

```
<TAG1>
     <TAG2>This is data </TAG2>
     This is a comment.
     <TAG2>This is data</TAG2>
</TAG1>
```

Data elements can be in any order within their container element's tag pair (if element is a child of a parent element) or within the file (if an element is not acting as a container).

Message Packet Conventions

- Generally, the first line in a message packet is the packet header consisting of packet type (FD, EI, or SS) followed by a unique packet identifier separated by one or more spaces, optionally followed by a return address and/or the "NOACK" keyword (for no acknowledgement).

- Application messages are characterized by the session type used to exchange the message. Messages exchanged via a Flight Data session are considered Flight Data messages and messages exchanged uniquely via Simplified Substitutions sessions are considered Simplified Subs messages. For Flight Data messages and Substitution messages, the interface uses message packets to exchange application messages. Message packets include a packet header and a packet body. Not all CDM application messages that are sent in a Simplified Substitution (SS) session are sent in an SS packet. The following application messages are exchanged via a Simplified Substitution session without the use of an SS packet:

- Slot Lists

- Report Requests

- Estimated Departure Clearance Time List

- Estimated Departure Clearance Substitution Status

- Estimated Departure Clearance Time Slot List

- Estimated Departure Clearance Time Unassigned Slots

- Bridging On

- Bridging Off

With the exception of Slot Lists, these application messages are considered Requests/Replies and only a single application message is allowed in the data buffer field when sending either the request or the corresponding reply. Slot Lists are also sent without the usage of an SS packet and are sent to the AOCNET addressee with a single Slot List contained in the Data Buffer field of the Protocol message.

The message packets have the following additional characteristics:

1. The first line in the message packet is the packet header, consisting of packet type followed by a unique packet identifier separated by one or more spaces, optionally followed by a return address and/or the "no acknowledgment" keyword.

   The packet types are as follows:

   - FD – Flight Data packet (used only in an Flight Data session)
   - EI – Early Intent packet (used only in an Flight Data session)
   - SS – Simplified Substitution packet (used only in an Simplified Sub session)

   The packet ID consists of:

   - 3-letter user code
   - 10-digit transmission date/time (month, day, hour, minute, second)
   - 2 digits for uniqueness (i.e., the extra two digits differentiate when multiple messages are generated in the same second)

   making the format for the packet ID: LLLddddddddddd.dd. Some examples of a packet header with no optional parameters are:

   ```
   FD     SWA0206122217.01

   SS     ABC0626021029.01
   ```

   The return address may be any valid ARINC address (i.e., 7 characters). If a return address is included, it must be the first field following the packet ID. If no return address is specified, the reply is sent to the sending AOCNET address. Some examples of a packet header with a return address are:

   ```
   FD     SWA0206122217.01     ABCDEFG

   SS     SWA0206122217.01     ABCDEFG
   ```

The "no acknowledgment" keyword is NOACK. The presence of the keyword means that no acknowledgment reply is generated if no errors or warnings are detected while processing the message contents. The NOACK keyword must be the last field on this line when present. An example packet header with the "no acknowledgment" keyword is:

<pre>   FD   SWA0206122217.01   NOACK</pre>

An example packet header with a return address and the "no acknowledgment" keyword is:

<pre>   FD   SWA0206122217.01 ABCDEFG NOACK</pre>

2. Messages within a packet body are terminated by either a carriage return/line feed combination (hex: 0D0A) or a single line feed (hex: 0A).

Continuation messages must be resolved within a single message packet body. That is, the last message in a message packet cannot contain a line continuation character.

CTOP Message Formats

- The XML formats for the individual CTOP messages are provided in Appendix D, Section 5.3. In order to avoid needless duplication, each data element in a CTOP message is defined in Appendix D, Section 6.

3.2.1.3.2.1 Aggregate Demand List

The ADL is the primary product that drives FSM and is used by many AOCNET Participants. It is an ASCII file consisting of two distinct parts, the header and the data update sections. It is comprised of data extracted from the TFMS databases, which are maintained with a combination of:

- Official Airline Guide (OAG) data

- Airline-provided flight data messages (FC, FX, FM, EI, and OOOI data)

- NAS messages generated from the ATC system (FZ, DZ, RZ, AZ, AF, UZ, and TZ data messages)

- Issued ground delays (EDCTs – CTs for individual delays, FA for blanket delays)

- GDP-specific data entered by traffic management specialists using AOCNET.

- Refer to Appendix B, ADL & FSM Broadcast File Format Specifications for a detailed description of the ADL file format.

3.2.1.3.2.2 FSM Broadcast Request

A client application, typically FSM, requests that an FSM Broadcast message be sent from the TFMS. The format of the request is completely contained within a CDM Protocol message and no explicit application message is sent by the client. Refer to the M_AUTO_MONITOR_REQ protocol message (located in Appendix C) for details.

3.2.1.3.2.3 FSM Broadcast Reply

The FSM Broadcast Reply Message is sent by the TFMS as a reply to a FSM Broadcast Request Message from a client application (typically FSM). The format of the message is identical to the format of the FSM Broadcast Message. Refer to the M_AUTO_MONITOR_REPLY protocol message (located in Appendix C) and section 3.2.1.3.2.4 (FSM Broadcast Message) for details.

3.2.1.3.2.4 FSM Broadcast Message

TFMS sends an FSM Broadcast Message (separate from ADLs) to notify applications, primarily FSM, of two sets of dynamic data:

- The current traffic management initiatives that are proposed, in place, or have been purged on this day,

- The current FEAs and FCAs that are available for monitoring with FSM.

Refer to Appendix B ADL & FSM Broadcast File Format Specifications for a detailed description of the FSM Broadcast Message format.

3.2.1.3.2.5 Meteorological Aviation Reports (METAR)

Each METAR text message file contains a single surface weather observation, detailing surface wind, visibility, weather, clouds (or vertical visibility into a surface-based obscuration), and temperatures, as well as other data.

METAR files are received in standard ASCII, and are human readable upon receipt. The METAR code is contained in the FCM-H1-2005, Federal Meteorological Handbook: Surface Observations and Reports, September 1, 2005. Figure 3-2 below presents an example of the METAR Code Breakout. Refer to the *TFMS-to-WSI Interface Control Document* for the details of the METAR message entries.

METAR Code Breakout

Example METAR

SAUS61 KWBC 031700
METAR KACY 031655Z AUTO 27012G26KT 1 1/2SM -RA BR OVC012 15/12 A2995 (REMARKS)

METAR WMO Bulleting Header

- SAUS61 - Indicates Surface Observation in the CONUS, region 61

- KWBC - identification of the processing center that generated the bulletin

- 031700 - day, hour, and minute the bulletin was prepared or the reporting time of the contained reports in it.

Note - A more detailed breakout of the METAR code is contained in the accompanying text.

METAR Observation Breakout

METAR	METAR - Indicates Surface Observation
KACY	CCCC - ICAO Station Identifier
031655Z	DDhhmmZ - Date/Time of Observation
AUTO	AUTO - Indicates Automated Station (Optional)
27012G26KT	dddssGggKT - Wind Speed/Direction/Gusts
1 1/2SM	(V_)VVSM - Visibility in Statute Miles
-RA BR	$iid_s d_s pp(oo)(xx)$ - Current Coded Weather
OVC012	$N_s N_s N_s H_s H_s H_s tt$- Cloud and Obscuration Forecast
15/12	TT/DD - Temperature and Dewpoint
A2995	Apppp - Altimeter Setting
(REMARKS)	Remarks

Figure 3-2. METAR Code Breakout

3.2.1.3.2.6 Terminal Aerodrome Forecasts (TAF)

Each TAF text message file contains a single terminal forecast, detailing surface wind, visibility, weather, and clouds (or vertical visibility into a surface-based obscuration), and temperatures, as well as other data. In addition, the TAF code presents any expected significant change(s) to one or more of these elements during the specified time period, ordinarily 30 hours.

Under some circumstances, a TAF may be issued for a shorter valid period. For example, if essential observational data elements are not available at the time of scheduled forecast preparation, a forecast issuance may be delayed resulting in a valid period of less than 30 hours or an amendment may be issued to reflect a change in weather trend, covering the period from the amendment time to the original end time of the forecast.

TAFs are received in standard ASCII, and are human readable upon receipt. The TAF code is contained in the Weather Service Operations Manual (WSOM), Chapter D-31, Aviation Terminal Forecasts, June 6, 1997. Figure 3-3 shows an example TAF Code Breakout. Refer to the *TFMS-to-WSI Interface Control Document* for the details of the TAF message entries.

Figure 3-3. TAF Code Breakout

3.2.1.3.2.7 Flight Data Messages

This section describes the message formats that participating NAS users can exchange with TFMS as part of the Collaborative Decision Making (CDM) data exchange. The goal of this data exchange is to improve the data that the FAA uses to detect and manage traffic management problems by sending automated updates from the NAS user's database system to the TFMS. In exchange for this data feed, NAS users are given access to aggregate demand data and other FAA-provided data that enhances the NAS user's ability to run its operation.

The messages described in this section are:

- Flight Create (FC) – Used by a NAS user to create a new flight

- Flight Modify (FM) – Used by a NAS user to modify an existing flight (can also be used in a simplified substitution packet for modifying flight-slot assignments during a delay program.)

- Flight Cancel (FX) – Used by a NAS user to cancel an existing flight (can also be used in a simplified substitution packet for modifying flight-slot assignments during a delay program.)

- Early Intent (EI) - The EI message is also used by NAS Users to provide TFMS with an early intent flight plan for a flight. The EI message is transmitted to the TFMS via an Early Intent (EI) packet.

General Rules for FC, FM, and FX Flight Message Processing

Message Formatting:

The following general rules apply to all message types.

1. Every flight message contains the following five fields for the purpose of flight identification. These five fields must appear in order at the beginning of each message, separated by spaces. (Refer to Table 3-II for details)
   a.   Message Type
   b.   Call Sign
   c.   Departure Airport
   d.   Arrival Airport
   e.   UTC Departure Date/Time

2. Message fields are separated by one or more spaces, as necessary.

3. Any flight data fields in addition to the five mandatory fields are explicitly identified by field reference number. The field reference number precedes the field value and is separated from the value by a space. For example, a Gate Departure Time would appear as: T1 101227.

4. Optional fields not being included in a particular message are omitted. There is no format for a blank field.

5. A message may be continued on additional lines if too long to enter on one line. A line continuation is indicated by a dash character (hexadecimal 2D). The line continuation character appears as a separate field and must be the last field on a line (separated from the preceding field by a space and followed by a new line sequence). A line continuation character is not allowed in the middle of a field.

6. Maximum message length for an individual flight message is 1024 characters.

Flight Data Fields

The Flight Data messages are composed from a set of pre-defined data fields. Certain fields are required on all message types; these are generally provided in a fixed format. Other fields are optional, and are provided in a variable format, with each field being identified by a reference number. Existing NAS field formats and definitions are used wherever possible.

The possible fields that can be used in an FC, FM, or FX flight data message are defined in Table 3-II below. Individual messages are composed of combinations of these fields. A field reference number is defined for each flight data field. The field definitions are divided into two lists: those currently implemented and those planned for future use. Each field is described by its reference number, name, the syntax, a text explanation of the field, and one or more examples.

Other conventions of the following messages and their definitions should be noted (also refer to common conventions, presented in Section 3.2.1.3.2):

- All dates and times are in UTC.

- Fields identified by integers correspond to NAS fields and their syntax matches (or is a subset of) that specified in NAS–MD–311 Appendix E.

- The fields designated by reference numbers of the form A1, A2, ... and T1, T2, ... are new CDM fields not defined in NAS.

Table 3-II. Flight Data Message Fields

Field	Designation	Unit/Format	Description	Bytes
Field 02	Flight Identification	La[a][a][a][a][a]	The flight call sign, also commonly referred to as Flight ID or ACID. Only the aircraft identification portion of the NAS syntax is accepted (i.e., the computer IDs are not used here). Flight IDs must match the NAS flight plan exactly. IDs consisting of a three-letter code and a flight number should use leading zeros on the flight number **only** if they will be filed that way on the flight plan (ex - if the flight plan will show ABC001, the CDM message should not show ABC1)	2-7
Field 03	Aircraft Type	[d][L]/La[a][a]/[L]	Aircraft equipment specification. The optional prefix number is the number of aircraft. The optional prefix letter specifies whether flight is:	2 - 9

Field	Designation	Unit/Format	Description	Bytes
			• T/ - TCAS equipped • H/ - Heavy • B/ - Both Required middle portion is FAA published aircraft type code. The optional suffix is equipment type: • /A - DME altitude enc • /B - DME no altitude enc	
Field 26	Departure Airport (NAS – Departure Point)	aaa[a]	The ICAO identifier for the airport of origin for this particular flight leg. Note - TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Field 27	Arrival Airport (NAS – Destination)	aaa[a]	ICAO identifier for the destination airport for this particular flight leg. TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Field A1	Original Departure Date/Time	dddddddd	Time the flight leg was originally scheduled to depart the gate. Format is *MMddhhmm* (zero padded as necessary). This field is used as part of the unique identification of a flight leg. Note - This time field should never change under normal circumstances.	8
Field A2	Assigned Arrival Slot	[L]LLLddddddL	Unique identifier of the arrival slot designated flight is currently assigned to. This entry is only applicable if a delay program is in place. Format is: • Arrival Airport - First three or four letters • Date/Time – In format DDhhmm (zero padded as necessary) • Unique Identifier - final letter is used by TFMS/FSM to assure that each slot has a unique name.	10-11
Field A6	Slot Hold Flag	L	Flag indicates whether the airline would like to hold the	1

Field	Designation	Unit/Format	Description	Bytes
			slot for a cancelled flight during the next FAA compression. Note – this only applies for a flight that is controlled as part of a ground delay program (GDP), Airspace Flow Programs (AFP), Ground Stops (GS) or Unified Delay Programs (UDP). Only sent on an FX or FM message.	
Field A7	Remark	**DVRSN**	This entry requests priority handling for the flight and posts the flight on the diversion recovery web page. Currently, the only entry is **DVRSN** (static entry) Note – this may be expanded in the future.	5
Field A8	Original Flight Identification	La[a][a][a][a][a][a]	Original Flight ID for planned flight supplanted by diversion recovery. This field only on an FC message, and means that this is a diversion recovery flight with respect to any ground delay programs (GDPs), Airspace Flow Programs (AFP), Ground Stops (GS) or Unified Delay Programs (UDP). It **must** be accompanied by field A9. Note - Formatting follows all the rules for field 02.	2-8
Field A9	Original UTC Departure Date/Time	dddddddd	Date and time the originally planned flight was scheduled to depart the gate. This field is only on an FC message and means this is a diversion recovery flight with respect to any ground delay programs (GDPs)), Airspace Flow Programs (AFP), Ground Stops (GS) or Unified Delay Programs (UDP). It **must** be accompanied by field A8. Formatting follows all the rules for field A1.	8
Field T1	Predicted Runway Departure Time	dddddd	Date and time the flight departs the runway. Format is *DDhhmm* (zero padded as required).	6
Field T2	Predicted Runway Arrival Time	dddddd	Date and time the flight will touch down on the arrival	6

Field	Designation	Unit/Format	Description	Bytes
			runway. Format is *DDhhmm* (zero padded as required).	
Field T3	Predicted Gate Departure Time	dddddd	Date and time the flight will push back from the departure gate. Format is *DDhhmm* (zero padded as required).	6
Field T4	Predicted Gate Arrival Time	dddddd	Date and time the flight will pull in at the arrival gate. Format is *DDhhmm* (zero padded as required).	6
Field T5	Controlled Departure Time	dddddd	Date and time the flight will have to leave the departure runway to make its controlled arrival time (EDCT). This is valid only if a delay program is in effect. Format is *DDhhmm* (zero padded as required).	6
Field T6	Controlled Arrival Time	dddddd	Date and time the flight must arrive to meet the goals of an FAA delay program (CTA). This is valid only if a delay program is in effect. Format is *DDhhmm* (zero padded as required).	6
Field T7	Earliest Runway Departure Time	dddddd	Date and time of the earliest runway departure time a user is willing to accept for a flight. This is only used if a delay program is in effect. Format is *DDhhmm* (zero padded as required).	6
Field T8	Earliest Runway Arrival Time	dddddd	Date and time of the earliest runway arrival time a user is willing to accept for a flight. This is only used if a delay program is in effect. Format is *DDhhmm* (zero padded as required).	6
Field T11	Actual Runway Time of Departure	dddddd	Date and time flight actually lifted off the departure runway (Off Time). Format is *DDhhmm* (zero padded as required).	6
Field T12	Actual Runway Time of Arrival	dddddd	Date and time flight actually touched down on the arrival runway (On Time). Format is *DDhhmm* (zero padded as	6

Field	Designation	Unit/Format	Description	Bytes
			required).	
Field T13	Actual Gate Time of Departure	dddddd	Date and time flight actually pushed back from the departure gate (Out Time). Format is *DDhhmm* (zero padded as required).	6
Field T14	Actual Gate Time of Arrival	dddddd	Date and time flight actually stopped at the arrival gate (In Time). Format is *DDhhmm* (zero padded as required).	6

3.2.1.3.2.7.1　　Flight Create (FC) Message

An individual flight is added to the TFMS database using a *Flight Create* (FC) message containing the fields specified in Table 3-III. Refer to Table 3-II above for details of message fields.

Table 3-III. Flight Create (FC) Message

Field	Designation	Required/Optional
Fixed Fields - The fixed fields **must** appear as the first five fields of the message in the order listed below. No field types appear for these fields in the message.		
Field 01	Message type (**FC**)	Required
Field 02	Call Sign	Required
Field 26	Departure Airport	Required
Field 27	Arrival Airport	Required
Field A1	UTC Departure Date/Time	Required
Variable Fields - The variable fields may appear in any order after the fixed fields. The field type (i.e., T1, A9, etc.) will precede each value. By convention, these fields usually appear in the order presented below.		
Field 03	Aircraft Type	Required
Field A6	*Slot Hold Flag*	*Optional*
Field A7	*Remark*	*Optional*
Field A8	*Original Flight Identification*	*Optional*
Field A9	*Original UTC Departure Date/Time*	*Optional*
Field T1	*Runway Departure Time*	*Optional, but desired. Required if T2 is present*
Field T2	*Runway Arrival Time*	*Optional, but desired. Required if T1 is present.*
Field T3	Gate Departure Time	Required
Field T4	Gate Arrival Time	Required

Field	Designation	Required/Optional
Field T7	*Earliest Runway Departure Time*	*Optional*
Field T8	*Earliest Runway Arrival Time*	*Optional*

Sample Flight Create (FC) Messages

```
FC  TWA804  ORD JFK  02211450  03 T/B727  T1 210918  T2 211109  T3
210900  T4 211117  T7 210918  T8 211115

FC  AAL2824  LGA  DFW  02061225  03 B757  T3 061500  T4 061824
```

In addition, there are other notes that provide guidance on FC messages:

- The FC message is used to reinstate a flight that has previously been cancelled.

- TFMS will reject an FC if a previous FC or FM has already been processed for the same flight with the flight not cancelled.

- TFMS uses information from the FC message to overwrite OAG schedule information in the TFMS database, provided it is the first message received from the NAS user for the flight.

- TFMS does **not** use information from the FC to overwrite NAS flight plan data. Data not specified on the NAS flight plan (i.e., NAS user predicted departure and arrival times, earliest arrival and departure times) are saved, even if the flight already exists. A warning is then sent to the NAS user that the flight already exists in the database.

- An FC message is allowed only in an FD packet. It is not allowed in an SS packet. (See SS packet data below)

- If the flight being created is a recovery of a diverted flight, fields A8 and A9 should be used to identify the original diverted flight (for which this flight is the recovery).

3.2.1.3.2.7.2   Flight Modify (FM) Message

A *Flight Modify* (FM) message may be used to modify any field associated with a flight. An FM message uses the fields specified in Table 3-IV. Refer to Table 3-II above for details of message fields.

Table 3-IV. Flight Modify (FM) Message

Field	Designation	Required/Optional

Field	Designation	Required/Optional
Fixed Fields - The fixed fields must appear in the order listed below, as the first five fields of the message. No field types should appear for these fields.		
Field 01	Message type (**FM**)	Required
Field 02	Call Sign	Required
Field 26	Departure Airport	Required
Field 27	Arrival Airport	Required
Field A1	UTC Departure Date/Time	Required
Variable Fields - Any fields except the following may appear in the variable section: • Field 01 • Field A2 • Field T5 • Field T6 • Field A8 • Field A9 Any other element may appear in any order (subject to pairing rules as previously stated i.e., T1 and T2)		

Sample Flight Modify (FM) Messages

```
FM  AAL2824  LGA  DFW  06141200  T3 141241 T1 141257 T2 141611 T4 141625

FM  UAL123  ORD  BOS  02211725  02 UAL123A  03 B757
```

In addition, there are other notes that provide guidance on FM messages:

- Any field may be modified except for Field 01 – Message Type.

- If fields 02, 26, 27, or A1 are modified, the new value is used in the fixed portion of any subsequent message for that flight.

- The predicted time fields must always be paired with a time for the corresponding event. For example, a predicted gate pushback time (T3) must be accompanied by a gate arrival time (T4). When updating the prediction of an arrival event (T2 or T4), the paired time can be either a predicted time (T1, T3) or an actual time (T11, T13). The following time field pairings are allowed when updating an predicted event time:

- T3 – T4

- T13 – T4

- T1 – T2

- T11 – T2

- Actual time fields (T11 – T14) may be sent either as a pair or by themselves.

- Fields T5, T6, and A2 are only allowed within an SS packet. These three fields must always appear together. Any FM in an SS packet must have these three fields. (See SS Packet data below)

- Any number of fields in one message may be modified, up to the maximum message length.

- When modifying field 03 (Aircraft Type), the entire previous specification is replaced with the new value.

- TFMS processes an FM for a flight that is not already in the TFMS database only if the message includes the following required fields from an FC: 02, 26, 27, A1, 03, T3, T4. TFMS then creates a new entry for this flight.

- TFMS does not use information from the FM to overwrite NAS flight plan data. Data that is not specified on the NAS flight plan (user predicted departure and arrival times, earliest arrival and departure times) is updated even if the flight already exists. A warning is sent to the NAS user that the flight already exists in the database. It is then the **user's** responsibility to see that any changes are filed with NAS, once the flight plan is filed.

3.2.1.3.2.7.3   Flight Cancel (FX) Message

An individual flight in the TFMS database is cancelled by using a *Flight Cancel* (FX) message. An FX message uses the fields specified in Table 3-V, in the indicated order. Refer to Table 3-II above for details of message fields.

Table 3-V. Flight Cancel (FX) Message

Field	Designation	Required/Optional
Fixed Fields - The fixed fields must appear in the order listed below, as the first five fields of the message. No field types should appear for these fields.		
Field 01	Message type (**FX**)	Required
Field 02	Call Sign	Required
Field 26	Departure Airport	Required
Field 27	Arrival Airport	Required
Field A1	UTC Departure Date/Time	Required
Variable Fields - Only one variable field is allowed on an FX message.		
Field A6	*Slot Hold Flag*	*Optional*

Sample Flight Cancel (FX) Messages

```
FX  AAL2824  LGA  DFW  06141735

FX  COA 1630  ORF  EWR  01112350 A6 H
```

In addition, there are other notes that provide guidance on FX messages:

- The FX message is allowed in either an FD or SS packet. (See SS packet information below).

3.2.1.3.2.7.4   Flight Data Message Responses

Multiple flight messages may be buffered into a single message packet for transmission to TFMS. Conventional Flight Data update messages are sent in a Flight Data (FD) packet. The TFMS may send a response to each received FD packet as described below.

a.   Flight Data Message Good Response

TFMS positively acknowledges each successful FD packet only if the NOACK keyword is not present on the packet header line. TFMS always sends a packet acknowledgment when an error or warning is detected while processing the packet.

The acknowledgment message returns the unique packet identifier, the number of messages:

- Processed correctly

- With errors

- With warnings.

These three numbers add up to the total number of messages received in the FD packet. The acknowledgment message is formatted as shown in the following example, if there are no errors received in the FD packet (Refer to Table 3-VI below for complete details):

Sample Flight Data Good Response

```
FD SWA0206122217.01 PROCESSED. 21 OK, 0 ERRORS, 0 WARNINGS
```

Table 3-VI. Flight Data Good Response

Field	Designation	Unit/Format	Description	Bytes
Type	Message Type	**FD**	Message Type - Static entry **FD**	2
Space	Space	[ ]	One space separating the Type from the Sender ID	1

Field	Designation	Unit/Format	Description	Bytes
Sender	Sender ID code	aaa	3-character code of the data sender (An airline with an FAA-assigned 3-letter code will use that code in the packet header; e.g., AAL, FDX. A data provider that is sending data for N-number flights will use the 3-letter code assigned by FAA especially for this purpose.)	3
DTG	Date /Time Group	dddddddddd	Date and time of transmission in the format: *MMDDhhmmss*	10
Period	Separator period	**.**	One period, separating the DTG from the Unique ID.	1
Unique	Unique identifier	dd	2 digits for uniqueness (in case multiple messages are generated in the same second)	2
Space	Space	[ ]	One space separating the Unique code from the Processed entry	1
Processed	Processed	**PROCESSED**	Static Entry - **PROCESSED**	9
Space	Spacing characters	**.[]**	Spacing characters period followed by a blank space	2
OK	Successful Messages	dd[d] **OK,**	Successful Message count in two or three digits, followed by a space, then the letters **OK** and a comma	7-8
Errors	Error Message Count	**0 ERRORS,**	Number of errors detected in the message packet as 0	10
Warnings	Warning Message Count	**0 WARNINGS**	Number of warnings detected in the message packet as 0	10

b.   Flight Data Message Error Response

If TFMS encounters errors or warnings in processing Flight Data Messages, it will do the following:

- Error – If TFMS encounters an ERROR in processing an FD packet, a packet is returned to the NAS user, including the message(s) that caused the errors, and explanatory text describing the error. TFMS generates an error whenever a flight message is not processed. Each message/error text pair is separated by an extra linefeed for readability.

- Warning - If TFMS generates any WARNINGs while processing an FD packet, a packet is returned including the message(s) that caused the warnings, and explanatory text describing the warning, in the same manner as with error packets. TFMS generates warning messages only in cases where the flight message is processed but some condition is detected that the NAS users should know about.

Each message/error text pair is separated by an extra linefeed for readability. The message is formatted as in the following example:

Sample Flight Data Error and Warning Responses

```
FD SWA0206122217.01 PROCESSED. 19 OK, 2 ERRORS, 0 WARNINGS
FC  AAL2824  LGA  DFW  02061225  03 B757  T3 061500  T4 061824
ERR001: FLIGHT ALREADY CREATED. USE FM
FC  AAL2825  LGA  ORD  02061225  03 B759  T3 061500  T4 061824
ERR324: UNKNOWN AIRCRAFT TYPE

 -----------------------------------------------------------------
FD  SWA0206122217.01 PROCESSED. 20 OK, 0 ERRORS, 1 WARNINGS
FC  AAL2824  LGA  DFW  02061225  03 B757  T3 061500  T4 061824
WARN001: FLIGHT NOT FOUND. CREATED FLIGHT.
```

Refer to Appendix A, which presents the complete list of error and warning messages. Table 3-VII below presents a breakout of the Flight Data Error and Warning Response.

Table 3-VII. Flight Data Error And Warning Response

Field	Designation	Unit/Format	Description	Bytes
Type	Message Type	**FD**	Message Type - Static entry **FD**	2
Space	Space	[ ]	One space separating the Type from the Sender ID	1
Sender	Sender ID code	aaa	3-character code of the data sender (An airline with an FAA-assigned 3-letter code will use that code in the packet header; e.g., AAL, FDX. A data provider that is sending data for N-number flights will use the 3-letter code assigned by FAA especially for this purpose.)	3
DTG	Date /Time Group	dddddddddd	Date and time of transmission in the format: *MMDDhhmmss*	10
Period	Separator period	.	One period, separating the DTG from the Unique ID.	1
Unique	Unique identifier	dd	2 digits for uniqueness (in case multiple messages are generated	2

Field	Designation	Unit/Format	Description	Bytes
			in the same second)	
Space	Space	[ ]	One space separating the Unique code from the Processed entry	1
Processed	Processed	**PROCESSED**	Static Entry	9
Space	Spacing characters	**.[]**	Spacing characters period followed by a blank space	2
OK	Successful Messages	dd[d] **OK,**	Successful Message count in two or three digits, followed by a space, then the letters **OK** and a comma	7-8
Errors	Error Message Count	d[d] **ERRORS,**	Number of errors detected in the message packet in one or two digits	10-11
Warnings	Warning Message Count	d[d] **WARNINGS**	Number of warnings detected in the message packet in one or two digits	10-11
		SOURCE ERROR LINE (*)		
Type	Message Type	**FL**	One of the following: • **FC** • **FX** • **FM** In which the error was detected	3
ACID	Flight Identification	La[a][a][a][a][a]	Flight call sign (Flight ID) as it appears in the OAG and/or subsequently will be filed on the NAS flight plan.	2-7
Dept Apt	Departure Airport	aaa[a]	Origin Airport ICAO identifier for this flight leg. TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Arr Apt	Arrival Airport	aaa[a]	Destination Airport ICAO identifier for this flight leg. TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Dept DTG	Departure Date/Time	dddddddd	Date and time the flight leg was originally scheduled to depart the gate. Format is *DDhhmmss* (zero padded as required).	8
Field	Field Number		Standard Field number **03**	3
Acft Type	Aircraft Type	[d][L]/La[a][a]/[L]	Aircraft equipment specification. The optional prefix number is the number of	2 - 9

Field	Designation	Unit/Format	Description	Bytes
			aircraft. The optional prefix letter specifies whether flight is: • T/ - TCAS equipped • H/ - Heavy • B/ - Both Required middle portion is FAA published aircraft type code. The optional suffix is equipment type: • /A - DME altitude enc • /B - DME no altitude enc	
Field	*Optional Fields*	**	*Optional Fields. See Table 3-II for full entry descriptions.*	**
ERROR CODE / TEXT (EITHER ERROR OR WARNING)				
Err Code	Error Code	**ERR**ddd:	Error Code and Detailed message. See Appendix A for the full listing.	22-87***
Warn Code	Warning Code	**WARN**ddd:	Warning Code and Detailed message. See Appendix A for the full listing.	24-55***
*Note – Optional. Not present if no errors. If there are errors, Source Error Line is followed by 1 or more Error Code/text. Repeated for every FD message containing 1 or more errors **Note – A number of fields may be entered for these fields, depending on the type of message the error occurred in ***Note – There may be multiple Field and Err Code entries.				

3.2.1.3.2.8 Early Intent (EI) Message

Early Intent messages provide a way for airlines to submit preliminary flight planning data directly to TFMS, prior to the time when a Flight Plan is formally filed with the NAS Host. Early Intent messages can be submitted anytime up to 24 hours prior to a flight's departure, and for traffic planning purposes will be handled by TFMS in much the same way that a filed Flight Plan is handled. However, the Early Intent message differs from the standard Flight Plan in two main ways:

- Early Intent message are processed only by TFMS. The Enroute computer at the ARTCC will never see them.

- Flight Plan data filed with the Host and forwarded by the Enroute computer to TFMS will always take precedence over Early Intent data.

Early Intent messages can be submitted over the ARINC MQ or over AOCNET. To simplify coding requirements for the airlines, Early Intent messages are sent as EI packets and with the packet body having the same format as Flight Plan (FP) messages submitted by airlines to the Enroute computer.

EI messages (i.e., EI packets) are formatted according to one of the following two options.

- Option 1 (preferred): The body of the message is an EI packet header followed by the EI packet body, which is a single FP message. The format for the entire EI packet is as follows:

Sample Early Intent (EI) Message – Option 1
(Line Numbers for Reference Only)

```
(1)    EI RYN0506060017.01
(2)    FP RYN218 B727 0471 DAY P1215 290 DAY..PSB.J49.ALB..PSM/0129
```

Line 1 – The EI packet header. This is described later in this section.

Line 2 – Contains the EI packet body (i.e., a single FP message). This is described later in this section.

- Option 2: The body of the message may be simply a single FP message. No EI packet header need be included. The format for the entire packet is as follows:

Sample Early Intent (EI) Message – Option 2
(Line Numbers for Reference Only)

```
(1)   FP RYN218 B727 0471 DAY P1215 290 DAY..PSB.J49.ALB..PSM/0129
```

Line 1 – Contains a single FP. This is described later in this section.

EI Packet Header

The standard EI message (i.e., EI packet) consists of two lines: the EI packet header and EI packet body (the FP message). The packet header is shown in the example below and detailed in Table 3-VIII.

Sample Early Intent (EI) Message Headers

Standard Header

```
EI RYN0506060017.01<NL>
```

NOACK Header

```
EI RYN0506060017.01 NOACK<NL>
```

Alternate Return Address Header

```
EI RYN0506060017.01 ALTNADD<NL>
```

Alternate Return Address and NOACK Header

```
EI RYN0506060017.01 ALTNADD NOACK<NL>
```

Table 3-VIII. EI Packet Header

Field	Designation	Unit/Format	Description	Bytes
Type	Packet type	**EI**	The first position on the header line is the static entry **EI**	2
Space	Space	[ ]	One space separating the Type from the Sender ID	1
Sender	Sender ID code	aaa	3-character code of the data sender (An airline with an FAA-assigned 3-letter code will use that code in the packet header; e.g., AAL, FDX. A data provider that is sending data for N-number flights will use the 3-letter code assigned by FAA especially for this purpose.)	3
DTG	Date /Time Group	dddddddddd	10-digit transmission date and time in the format: *MMDDhhmmss*	10
Period	Separator period	**.**	One period, separating the DTG from the Unique ID.	1
Unique	Unique identifier	dd	2 digits for uniqueness (in case multiple messages are generated in the same second)	2
Space	*Options space*	*[ ]*	*(Optional) Space required if optional alternate address is used.*	*1*
ALTN ADD	*Alternate Address*	*aaaaaaa*	*(Optional) The client can optionally direct TFMS to send the reply to an address other than the return address. This is done by including the alternate return address on the EI packet header line as shown in the third example. (Represented here by ALTNADD)*	*7*
Space	*Options space*	*[ ]*	*(Optional) Space required if optional NOACK is used.*	*1*
NOACK	*No Acknowledgement code*	*NOACK*	*(Optional)The client can optionally direct TFMS to send a reply only if there is an error. This is done by including the "NOACK" keyword in the header line as shown in the second example above. If the*	*5*

Field	Designation	Unit/Format	Description	Bytes
			NOACK keyword is not present, TFMS will send a reply for every EI message.	

EI Packet Body

An EI packet body consists of a single FP message, as shown in the example below. The FP message is detailed in Table 3-IX (refer to NAS MD-311, Appendix E for additional explanations of each individual field).

Sample Early Intent (EI) Packet Body (FP Message)

```
FP RYN218 B727 0471 DAY P1215 290 DAY..PSB.J49.ALB..PSM/0129 |NRP
```

Table 3-IX. EI Packet Body (FP Message)

Field	Designation	Unit/Format	Description	Bytes
01	Message Type	**FP**	Message Type - Static entry **FP**	2
02	Call Sign	La[a][a][a][a][a]	Flight Identifier or call sign (Ex – RYN218)	2-7
03	Aircraft Type	[d][L]/La[a][a]/[L]	Aircraft equipment designator (Ex – B7272)	2-9
05	Airspeed	dd[d][d] or [L]dd[d] or LL	Aircraft cruising speed (EX -0471)	2-4
06	Departure Airport	aaa[a]	Airport that originated flight in three or four characters (EX – DAY)	3-4
07	Departure Time	**P**dddd	Departure time in format *hhmm*. Prefix **P** indicates proposed departure time. (EX – P1215)	5
09	Cruising Altitude	dd[d][/LLL[L][L]/dd[d]]	Planned cruising altitude in hundreds of feet. (EX – 290)	2-3
10	Route of Flight/Estimated Time Enroute	*	The planned route of flight expressed as a series of fixes and routes connecting the departure airport and the arrival airport. This sequence is ended with a slash (/) separating the estimated time enroute, in *hhmm* format. (EX - DAY..PSB.J49.	*

Field	Designation	Unit/Format	Description	Bytes
			ALB..PSM/0129)	
11	Remarks	See Description	Remarks (optional); separated by a vertical bar (EX - |NRP) The allowable remarks at this time are: • NRP – National Route Program Flight • LIFEGUARD – Lifeguard/ MEDEVAC Flight • CATIII – Cat III Landing Minimums Flight • ALTREV – Altitude Reservation Flight • SWAP – SWAP flight • DVRSN – Diversion Recovery Flight • ADCUS – Advise Customs • FCA – Flow Constrained Area • WXRTE – Severe Weather Reroute • HAR – High Altitude Redesign PTP – High Altitude Point-to-point	4 - 71

*Note – For further details on NAS flight plan format for flight route, refer to NAS MD–312.

3.2.1.3.2.9 Simplified Substitution Messages

The SCS, SC, HOLD ALL SLOTS, and RELEASE ALL SLOTS messages are exchanged in a Simplified Substitution (SS) packet for modifying flight-slot assignments during a ground delay program. For the conventions of the SS packet, see section 3.2.1.3.2, under ***Message Packet Conventions.*** The formatting of these messages when used for SS packets is included in the following sections 3.2.1.3.2.10 through 3.2.1.3.2.13. The FM and FX messages can also be exchanged in SS packets. For format of the FM and FX messages, refer to Section 3.2.1.3.2.7 Flight Data Messages.

Although not considered a Substitution message, the TFMS sends a Slot List to users whenever a delay program (GDP, GS, or AFP) is issued or revised. The Slot List is not sent in a message packet. It is sent as an unsolicited message. See Section 3.2.1.3.2.22.1 for a description of the Slot List message.

3.2.1.3.2.10   Slot Credit Substitution (SCS) Message

A slot credit substitution request can be submitted to TFMS using the SCS message. An SCS is a unique type of request that does not fit the FM message format that is used for normal substitutions. The format of the SCS message differs from the other CDM messages in that the format is completely fixed. Special fields are used in the SCS that cannot be modified in an FM message. This was done because the additional fields in an SCS message are not flight attributes that are stored by TFMS. Rather, they are temporary values used only in the processing of the request.

An SCS message uses the fields specified in Table 3-X, in the indicated order.

Table 3-X. Slot Credit Substitution (SCS) Message

Field	Designation	Unit/Format	Description	Bytes
Field 01	Message type	**SCS**	Static Entry - **SCS**	3
Field 02	Flight Identification	La[a][a][a][a][a]	Flight call sign (Flight ID) as it appears in the OAG and/or subsequently will be filed on the NAS flight plan. Only the aircraft identification portion of the NAS syntax is accepted (computer IDs are not used here). Flight IDs must match the NAS flight plan exactly. IDs consisting of a 3-letter code and a flight number should use leading zeros on the flight number only if they will be filed that way on the flight plan.	2-7
Field 26	Departure Airport (NAS Departure Point)	aaa[a]	ICAO identifier for the airport of origin for this flight leg. TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Field 27	Arrival Airport (NAS Destination)	aaa[a]	ICAO identifier for the destination airport for this flight leg. TFMS also accepts published FAA three-letter designator for CONUS airports.	3 - 4
Field A1	UTC Departure Date/Time	dddddddd	Date/and time when the flight leg was originally scheduled to depart the gate. Format is *MMDDhhmm*, and must be 8 digits, zero padded. This field is used as part of the unique identification of a flight leg.	8
No tag	Yielded Slot	Laadddddda	Slot designator. The format is a	10-14

Field	Designation	Unit/Format	Description	Bytes
	(YSLOT)	Or **FCA**aaadddddda	concatenation of: • Airport name: 3 or 4 characters or FCA name : FCA followed by up to 3 characters • Arrival Slot date and time: Format is *DDhhmm*, and must be 6 digits, zero padded. • 1-letter suffix: The suffix letter is used to ensure that slot name is unique	
No tag	Earliest Acceptable Time of Arrival (EATA)	dddddd	Earliest acceptable Arrival Slot time the aircraft will take. Format is *DDhhmm*, and must be 6 digits, zero padded.	6
No tag	Latest Acceptable Time of Arrival (LATA)	dddddd	Latest acceptable Arrival Slot time the aircraft will take. Format is *DDhhmm*, and must be 6 digits, zero padded.	6

Sample Slot Credit Substitution (SCS) Message for a GDP

```
SCS UNA1277 DFW SFO 03241701 SFO.242040A 242050 242120
```

Sample Slot Credit Substitution (SCS) Message for an AFP

```
SCS UNA1277 DFW SFO 03241701 FCAA02.242040A 242050 242120
```

The fields contained in the above examples have the following meaning:

- SCS – This is an SCS request message type. (Required)

- UNA1277 – The ID of the flight to be subbed into the new slot. (Required)

- DFW – The origin of the flight. (Required)

- SFO – The destination of the flight. (Required)

- 03241701 – The original departure date/time for the flight. (Required)

- SFO.242040A – The yielded slot. (Required)

- 242050 – The earliest acceptable time for the new slot. (Required)

- 242120 – The latest acceptable time for the new slot. (Required)

In addition, there are other notes that provide guidance on SCS messages:

- The SCS message is allowed only in an SS packet.

3.2.1.3.2.11   Slot Create (SC) Message

The SC message is used to create a slot for an existing un-controlled flight. The first field defines the message type. The next four fields uniquely identify the flight that is being modified. The remaining fields provide the CTD, CTA, and arrival slot for the flight. Table 3-XI details the layout of a Slot Create message. A sample SC message for a GDP has the following format:

Sample Slot Create Message for a GDP

```
SC ABC999 STL LGA 06260315 T5 260328 T6 260552 A2 LGA.260552Q
```

A sample SC message for an AFP has the following format:

Sample Slot Create Message for an AFP

```
SC ABC999 STL LGA 06260315 T5 260328 T6 260552 A2 LGA.260552Q
```

The sample messages are decoded as follows:

- SC – Message type. (Required)

- ABC999 – Flight identifier (a.k.a. call sign) of the flight being modified. (Required)

- STL – Origin airport for the flight. (Required)

- LGA – Destination airport for the flight. (Required)

- 06260315 – Original gate departure date and time for the flight (0315Z on June 26th). (Required)

- T5 – Field identifier for CTD. (Required)

- 260328 – New value of CTD requested for this flight (0328Z on the 26th). (Required)

- T6 – Field identifier for CTA. (Required)

- 260552 – New value of CTA requested for this flight (0552Z on the 26th). (Required)

- A2 – Field identifier for assigned arrival slot. (Required)

- LGA.260552Q – Name of arrival slot requested for this flight. (NOTE: TFMS creates suffixes using the early part of the alphabet and also uses Z. By choosing a suffix that is later in the alphabet but not Z, the user increases the changes that the slot name will be unique.) (Required.)

Table 3-XI. Slot Create (SC) Message

Field	Designation	Unit/Format	Description	Bytes
Field 01	Message type	**SC**	Static Entry - **SC**	2

Field	Designation	Unit/Format	Description	Bytes
Field 02	Flight Identification	La[a][a][a][a][a]	Flight call sign (Flight ID) as it appears in the OAG and/or subsequently will be filed on the NAS flight plan. Only the aircraft identification portion of the NAS syntax is accepted (computer IDs are not used here). Flight IDs must match the NAS flight plan exactly. IDs consisting of a 3-letter code and a flight number should use leading zeros on the flight number only if they will be filed that way on the flight plan.	2-7
Field 26	Departure Airport (NAS Departure Point)	aaa[a]	ICAO identifier for the airport of origin for this flight leg. TFMS also accepts published FAA 3-letter designator for CONUS airports.	3 - 4
Field 27	Arrival Airport (NAS Destination)	aaa[a]	ICAO identifier for the destination airport for this flight leg. TFMS also accepts published FAA three-letter designator for CONUS airports.	3 - 4
Field A1	UTC Departure Date/Time	dddddddd	Date/and time when the flight leg was originally scheduled to depart the gate. Format is *MMDDhhmm*, and must be 8 digits, zero padded. This field is used as part of the unique identification of a flight leg.	8
A2	Assigned Arrival Slot	aaa[a].ddddddL or FCAaaa.ddddddL	The time slot that has been reserved at the airport or FCA for this flight to arrive. It consists of: • Name – airport of FCA name. An airport name can be three or four characters and can include letters and numbers. An FCA name must be the entry **FCA** followed by three alphanumeric characters. • Date/Time – Slot date and time in the format The format is DDhhmm (padded as necessary)	11-12 or 14

Field	Designation	Unit/Format	Description	Bytes
			• Suffix Letter - The suffix letter is used to ensure that slot name is unique. Note - An FCA name must be six characters starting with the literal letters "FCA". The remaining characters can be digits, upper-case letters, dash ("-"), or underscore ("_"). An FCA name cannot end with an underscore.	
T5	Controlled Time of Departure (EDCT)	dddddd	Date and time the flight will have to leave the departure runway to make its controlled arrival time. Format is *DDhhmm*, zero padded if necessary	6
T6	Controlled Time of Arrival	dddddd	Date and time the flight must arrive to make its arrival slot. • For a GDP or GS, the CTA is the arrival time at the airport • For an AFP, the CTA is the arrival time at the FCA Format is *DDhhmm*, zero padded if necessary	6

3.2.1.3.2.12   HOLD All Slots Message

The HOLD ALL SLOTS message holds all open slots belonging to a user for a particular GDP or AFP. A sample message illustrates the message format as follows:

Sample HOLD ALL SLOTS Message (for a GDP)

```
HOLD ALL SLOTS FOR LGA
```

Table 3-XII below presents a breakout of the Hold All Slot message

Table 3-XII. Hold All Slots Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Hold All Slots	**HOLD ALL SLOTS FOR** Laa[a] or FCAaaa	Hold All Slots for a specific airport in three or four alphanumeric or for a specific FCA in six alphanumeric.	22-25

3.2.1.3.2.13 Release All Slots Message

The RELEASE ALL SLOTS message releases all open slots belonging to a user for a particular GDP or AFP. A sample message illustrates the message format as follows:

Sample RELEASE ALL SLOTS Message (for an AFP)

```
RELEASE ALL SLOTS FOR FCAA02
```

Table 3-XIII below presents a breakout of the Release All Slot message

Table 3-XIII. Release All Slots Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Release All Slots	**RELEASE ALL SLOTS FOR** Laa[a] or FCAaaa	Release All Slots for a specific airport in three or four alphanumeric or for a specific FCA in six alphanumeric.	25-28

3.2.1.3.2.14 Substitution Message Responses

TFMS always acknowledges an SS packet regardless of whether the NOACK keyword was present in the received SS packet. The response is sent to the return address on the incoming message. The format of the response is the same regardless of what types of messages were sent in the SS packet.

If no errors are detected in the SS packet, the TFMS database is updated to reflect the changes requested by the airlines. The response to the airline includes the packet identifier, a message indicating it was successfully processed, and an updated slot list for each flight affected by the message. If the user performs substitutions for any affiliates using different three-letter codes (e.g., if user ABC also subs for user DEF), their list will include all flights for which they can substitute.

A new, complete set of slot lists is sent every time the FAA modifies a GDP, GS, or AFP. The user may submit substitution messages only for flights that have been issued in a Slot List.

A Slot List is comprised of 2 parts:

- The Slot List header – This consists of two lines of text that describe the Slot List as shown in Table 3-XIV.

- The Slot List body – The Slot List body is formatted as a collection of text, where each line describes a flight controlled by the delay program (GDP or AFP) identified in the Slot List header. Each line of the Slot List body is comprised of fields that collectively provide data on the slot that the controlled flight has been assigned for the delay program. This is also shown in Table 3-XIV.

Sample Substitution Good Response

```
    SS ABC0625121029.01 ACCEPTED.
    SLOT LIST for LGA

ACID     ASLOT      DEP ARR   CTD     CTA     TYPE EX CX SH ERTA   IGTD
ABC1234 LGA260500A DCA LGA   260400  260500  SUB  -  Y  -  -      260145
ABC5678 LGA260400A IAD LGA   260300  260400  SUB  -  -  -  260400 260245
```

Table 3-XIV below presents a breakout of the Substitution Good Response

Table 3-XIV. Substitution Good Response Message

Field	Designation	Unit/Format	Description	Bytes
Packet Type	Initial Packet Type Identifier	LL	Identifies the initial packet type being replied to	3
Sender	Sender ID code	aaa	3-character code of the data sender (An airline with an FAA-assigned 3-letter code will use that code in the packet header; e.g., AAL, FDX. A data provider that is sending data for N-number flights will use the 3-letter code assigned by FAA especially for this purpose.)	3
DTG	Date /Time Group	dddddddddd	10-digit transmission date and time in the format: *MMDDhhmmss*	10
Period	Separator period	**.**	One period, separating the DTG from the Unique ID.	1
Unique	Unique identifier	dd	2 digits for uniqueness (in case multiple messages are generated in the same second)	2
Space	Space	[ ]	One space separating the Unique code from the Processed entry	1
Accepted	Accepted	**ACCEPTED**	Shows the identifier of the packet that is being replied to. The word **ACCEPTED** indicates that the processing of the packet was successful.	8

Field	Designation	Unit/Format	Description	Bytes
Slot List for	Slot List Identifier	**SLOT LIST FOR FCA**aaa *or* **SLOT LIST FOR** aaa	Identifies airport or FCA that the slot list is for.	17-20
Blank Line	Blank Line Separator		Blank line separating data	1
SLOT LIST				
Slot List Headers	Slot List Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold flag (Yes or No) • EENTRY – Earliest Entry Time (for AFP) *or* ERTA - Earliest Runway Time of Arrival *(for Airport GDP)* • IGTD - Initial Gate Time of Departure	62
SLOT LIST DATA FIELDS*				
ACID	Flight Identification	Laa[a][a][a][a]	Flight call sign as it appears in the OAG and/or subsequently will be filed on the NAS flight plan. Padded with spaces to equal 8 bytes.	8
ASLOT	Arrival Slot	LLL[Laa].dddddddL or **FCA**aaa.dddddddL	The time slot that has been reserved at the airport or FCA for this flight to arrive. It consists of: • Name – airport or FCA name. An airport name can	15

Field	Designation	Unit/Format	Description	Bytes
			be three or four characters and can include letters and numbers. An FCA name must be the entry **FCA** followed by three alphanumeric characters. • Date/Time – Slot date and time. The format is DDhhmm (padded as necessary) • Suffix Letter - The suffix letter is used to ensure that slot name is unique. Note - An FCA name must be six characters starting with the literal letters "FCA". The remaining characters can be digits, upper-case letters, dash ("-"), or underscore ("_"). An FCA name cannot end with an underscore. Padded with spaces to equal 15 Bytes.	
DEP	Departure Airport	LLL[L]	Departure airport code in standard 3 or 4 letter identifier, padded with spaces to equal 5 bytes	5
ARR	Arrival Airport	LLL[L]	Arrival airport code in standard 3 or 4 letter identifier, padded with spaces to equal 5 bytes. Note - For a GDP, the arrival airport will be the same for every flight; for an AFP, they may differ. It is padded with spaces to equal 5 bytes	5
CTD	Controlled Time of Departure	dddddd	The time the flight should take off. In the format *DDhhmm*, padded with spaces to equal 7 bytes	7
CTA	Controlled Time of Arrival	dddddd	The time the flight should arrive at the controlled airport or FCA (e.g., 260400). In the format *DDhhmm*, padded with spaces to equal 7 bytes	7
TYPE	Control Type	LLL[L]	The source of the current control times for this flight (e.g., GDP). The control types that can	5

Field	Designation	Unit/Format	Description	Bytes
			appear in a slot list for a GDP or AFP are: • ABRG – the flight was utilized to create a bridge in order to adaptive compress a slot. • ADPT – control time assigned when the flight was adaptively compressed by the TFMS adaptive compression process (AFP and GDP) • AFP – Control times were computed as part of an initial AFP, a revision to an AFP, or an extension to an AFP. • BLKT – Control times were computed by a blanket program. • COMP – Control times were computed by compression. • DAS – Control time which resulted from the assignment of the average delay to a pop-up flight which did not receive an unassigned slot in an AFP or GDP. For DAS based programs this is used for the initial delay assignments to all pop-up flights. For GAAP and UDP based programs, this control type is used only if no unassigned slot is available for the pop-up. This control type is not used for re-controlled flights. (AFP and GDP). ECR – Control times were assigned by an FAA ECR request. • GAAP – control times are the result of a GAAP or UDP based AFP or GDP if a pop-up or a re-control flight is allocated to an unassigned slot. This occurs for all pop-	

Field	Designation	Unit/Format	Description	Bytes
			up flights in a GAAP or UDP based program when an unassigned slot is available for the flight. However, only some classes of re-controlled flights in a GAAP or UDP are assigned to unassigned slots. (e.g., those that occur after dropping out of an AFP). (AFP and GDP) • GDP – Control times were computed as part of an initial GDP, a revision to a GDP, or an extension to a GDP. • GS – Control times were computed by a ground stop. • RCTL – control time which resulted from the assignment of the average delay to a flight that was at some point controlled by a GDP or AFP. which was then purged or the flight dropped out and was re-controlled in another AFP or CTOP. For DAS programs this is used for the initial delay assignments to all re-controlled flights. For GAAP and UDP, this control type is used only if no unassigned slot is available for the re-controlled flight or the class of re-controlled flight is never assigned to unassigned slots. As opposed to other pop-ups, RCTL flights retain full substitution rights for an AFP. • SBRG – Control times were assigned when creating a bridge for an SCS or ECR request. • SCS – Control times were	

Field	Designation	Unit/Format	Description	Bytes
			assigned by a user slot credit substitution message. • SUB – Control times were assigned by a conventional user substitution message. • UBRG – Control times assigned when creating a bridge for pop-up flight assignments during UDP. Performed automatically by the TFMS-Core (AFP and GDP) • UPD – Control times are from an FAA "EDCT UPDATE" command. This entry is padded with spaces to equal 5 bytes.	
EX	Exempt Flag	**Y** *or* –	Flag indicating flight was exempt from delays when the GDP or AFP was computed. (one of two entries): • Y if true • - if False This entry is padded with spaces to equal 3 bytes	3
CX	Cancel Flag	**Y** *or* –	Flag indicating whether the flight is currently cancelled. (one of two entries): • Y if true • - if False This entry is padded with spaces to equal 3 bytes	3
SH	Slot Hold Flag	**Y** *or* –	Flag indicating whether the flight is currently on Slot Hold. (one of two entries): • Y if true • - if False This entry is padded with spaces to equal 3 bytes	3
ERTA for a GDP or EENTRY for an AFP	Earliest Runway Time of Arrival Earliest Entry Time	dddddd	The earliest time flight can arrive at the controlled element in the case that the delays are reduced (e.g., 260200). In the format *DDhhmm*, padded with spaces to equal 7 bytes	6

Field	Designation	Unit/Format	Description	Bytes
			EENTRY is used to ensure that a flight will not be assigned a slot for an AFP that it cannot use. Since the CDM Participants do not send earliest entry times for an FCA, TFMS computes this by: first determining the earliest ETA (EETA), then applying any delta to the ENTRY time. • If flight has ERTD, EENTRY = ENTRY + (ERTD-ETD) • Else if flight has LRTD, EENTRY = ENTRY + (LRTD-ETD) • Else if flight has LGTD, EENTRY = ENTRY + ((LGTD+10)-ETD) • Else if flight has IGTD, EENTRY = ENTRY + ((IGTD+10)-ETD) Else, EENTRY = ENTRY	
IGTD	Initial Gate Time of Departure	dddddd	The original scheduled gate push back time for the flight in the format *DDhhmm*. Used to uniquely identify the flight.	6

*Note – There may be multiple rows of data under the header.

If errors are detected in the SS packet, the entire packet is rejected and the TFMS database is not updated. The response to the airline includes the packet identifier, a message indicating it was rejected, and the number of errors. For each error, the response shows the SS message that triggered the error and the reason for the error.

Sample Substitution Error Response

```
SS ABC0625121029.01 REJECTED. 1 ERROR.

FM ABC1234 DCA LGA 06260145 T5 260400 T6 260430 A2 LGA260500A
ERR453: SCS MESSAGE FAILED TO UPDATE FLIGHT
```

The meaning of the sample response is as follows:

Line 1: Shows the identifier of the packet that is being replied to. The word "REJECTED" indicates that the processing of the packet was successful. The number of errors is shown.

Line 2: blank

Line 3: The SS message that triggered the error. (Refer to Tables 3-XXIV, 3-XXV, 3-XXX, 3-XXXI, 3-XXXII, and 3-XXXIII for the format of these messages.)

Line 4: The error code and message. In the example above, it was Error 453, indicating the flight specified on an SCS message could not be updated in the TFMS database. For complete listing of Error messages, refer to Table A-I.

3.2.1.3.2.15   Report Requests

NAS Users can make requests for data as well as requests that control aspects of substitution process. Requests have two forms: Report Requests and Bridging Requests.

Four reports are available to the NAS Users. These reports apply to FCAs and AFPs as well as airports GDPs:

- EDCT LIST

- EDCT SUB SHOW

- EDCT SLIST

- EDCT UNASSIGNED SLOTS

Report requests are transmitted to the Air Traffic Control System Command Center (ATCSCC) by the requestor.

Additionally, two Bridging requests are available to the NAS Users:

- EDCT BRIDGING ON

- EDCT BRIDGING OFF

- EDCT Report Requests

A sample report request has the following format:

Sample EDCT Report Request
(Line Numbers for Reference Only)

```
(1)  EDCT LIST
(2)  EDCT SUB SHOW
(3)  EDCT SLIST LGA (or) EDCT SLIST FCA002
(4)  EDCT UNASSIGNED SLOTS FCA002 (or) EDCT UNASSIGNEDSLOTS FCA002 (or)
EDCT UNASSIGNED SLOTS LGA (or) EDCT UNASSIGNEDSLOTS LGA
```

Table 3-XV below presents a breakout of the EDCT Report Request

Table 3-XV. Report Request

Field/Line	Designation	Unit/Format	Description	Bytes
Line 1-*n*: Request(s). The packet can include one or more requests. Each requested report comes back as a separate message. Possible request types are listed below				
1	EDCT LIST	**EDCT LIST**	Returns a list of all airports that currently have GDPs. (See 3.2.1.3.2.16 below)	9
2	EDCT SUB SHOW	**EDCT SUB SHOW**	Returns the substitution status (on or off) at all airports that currently have GDPs (sub status is also part of the EDCT LIST report) (See 3.2.1.3.2.17 below)	13
3	EDCT SLIST	**EDCT SLIST** Laa[a] or FCA[aaa]	Returns a slot list for the requested airport or the FCA Unlike the slot lists when the GDP is issued, the EDCT SLIST report returns a single list that includes all flights affiliated with the requesting airline. That is, the reply can include different 3-letter airline codes in one report	15-17
4	EDCT UNASSIGNED SLOTS	**EDCT UNASSIGNED SLOTS** aaaa or FCA[aaa]	Returns a list of unassigned slots, similar to the ADL UNNASSIGNED_SLOTS block	25-28

3.2.1.3.2.16   EDCT LIST

This message returns a list of all airports that currently have GDPs. The EDCT List response includes FCAs in AFPs and in active CTOPs. For the FCAs in active CTOPs, the SUBS, SCS and AC fields will always be set to "OFF" and the Bridging Status will always be set to "OFF". A sample EDCT LIST has the following format:

Sample EDCT LIST
(Line Numbers for Reference Only)

```
(1)     Number of airports currently controlled: 3
(2)
(3)     DEST    TIMES     CONTROL     FLIGHTS     SUBS    SCS     AC
(4)     -------------------------------------------------------
(5)     EWR     /19/01/   EDCT+DAS    255         ON      ON      ON
(6)     JFK     /20/23/   GS          47          OFF     OFF     ON
(7)
(8)     Bridging status at EWR:
```

```
(9)    - Carriers which turned bridging OFF:
(10)     USA
(11) Bridging status at JFK: ON.
(12)
(13) Number of FCAs currently controlled: 1
(14)
 (15) FCA     TIMES    CONTROL    FLIGHTS    SUBS   SCS    AC
(16) -------------------------------------------------------
(17) FCAA02  /18/23/  EDCT+DAS    24         ON     ON     OFF
(18)
(19) Bridging status at FCAA02: ON.
(20)
(21) Bridging turned OFF permanently for non-CDM general aviation
and military.
(22)
(23) Printer: $fsa.//wkstn32
```

Table 3-XVI below presents a breakout of the EDCT List

Table 3-XVI. EDCT List

Field/Line	Designation	Unit/Format	Description	Bytes
1	Number of Controlled Airports	**NUMBER OF AIRPORTS CURRENTLY CONTROLLED:** d[d]	The number of airports that currently have GDPs or GSs.	42-43
2	Blank Line Separator		Blank line separating data	1
3	Headers	**DEST TIMES CONTROL FLIGHTS SUBS SCS AC**	Column Headers: • DEST – Destination Airport • TIMES – GDP/GS Time range • CONTROL – Type of Control issued • FLIGHTS – Number affected • SUBS – Substitution Status • SCS - Slot Credit Substitutions Status • Adaptive Compression Status	49
4	Dashed Line Separator	------------------ ------------------	Dashed line separator	49
5	Destination	Laa[a]	Destination airport in three or four character identifier. This entry is padded with spaces to equal 8 bytes.	8
5	Times	/dd/dd	Start and end times of the GDP or ground stop in the following	9

Field/Line	Designation	Unit/Format	Description	Bytes
			format: */hh/hh* (hour start and hour end in sequence) This entry is padded with spaces to equal 9 bytes.	
5	Control	LL[LL…LLL]	Control Type issue: May be more than one entry. If so, each entry will be joined by a plus sign. This entry is padded with spaces to equal 12 bytes.	12
5	Flights	d[d][d][d]	Number of flights that are affected by the Control. In as many digits are necessary to detail. This entry is padded with spaces to equal 10 bytes.	10
5	Sub Status	**ON** *or* **OFF**	Status of substitutions: One of two entries: • **ON** • **OFF** This entry is padded with spaces to equal 7 bytes.	7
5	SCS Status	**ON** *or* **OFF**	Status of Slot Credit Substitutions. One of two entries: • **ON** • **OFF**	2-3
5	AC	**ON** *or* **OFF**	Adaptive Compression Status. One of two entries: • **YES** • **NO**	2-3
6 – #*n*			Multiple entries are possible containing the items listed as Field/Line 5.	48-49 per line
7	Blank Line Separator		Blank line separating data	1
8	Bridging Status	**BRIDGING STATUS AT** Laa:	Status of bridging for individual GDPs.	23
9	Bridging Off	**- CARRIERS WHICH TURNED BRIDGING OFF:**	If bridging is off, the report lists each carrier that currently has bridging off for that GDP. This field is led by two blank spaces.	39
10	Carrier List	LLL [LLL]	Carriers which have turned Bridging off. This field is led by 4 blank spaces.	3-68

Field/Line	Designation	Unit/Format	Description	Bytes
11	Bridging Status	**BRIDGING STATUS AT** Laa: **ON**	Status of bridging for individual GDPs, indicating Bridging is ON.	28
12	Blank Line Separator		Blank line separating data	1
13	Number of Controlled FCAs	**NUMBER OF FCAS CURRENTLY CONTROLLE D: d[d]**	Number of controlled FCAs. In one or two digits	38-39
14	Blank Line Separator		Blank line separating data	1
15	Headers	**FCA TIMES CONTROL FLIGHTS SUBS SCS AC**	Column Headers: • FCA – FCA Identifier • TIMES – AFP or FCA control time range • CONTROL – Type of Control issued • FLIGHTS – Number affected • SUBS – Substitution Status • SCS - Slot Credit Substitutions Status • Adaptive Compression Status	49
16	Dashed Line Separator	------------------- -------------------	Dashed line separator	49
17	FCA Identifier	**FCA**aaa	FCA in six character identifier. This entry is padded with spaces to equal 8 bytes.	8
17	Times	/dd/dd	Start and end times of the AFP or the Controlled time period of the FCA included in a CTOP, in the following format: */hh/hh* (hour start and hour end in sequence) This entry is padded with spaces to equal 9 bytes.	9
17	Control	LL[LL…LLL]	Control Type issue: May be more than one entry. If so, each entry will be joined by a plus sign. This entry is padded with spaces to equal 12 bytes.	12
17	Flights	d[d][d][d]	Number of flights that are affected by the Control. In as many digits are necessary to	10

Field/Line	Designation	Unit/Format	Description	Bytes
			detail. This entry is padded with spaces to equal 10 bytes.	
17	Sub Status	**ON** *or* **OFF**	Status of substitutions: One of two entries: • **ON** • **OFF** This entry is padded with spaces to equal 7 bytes.	7
17	SCS Status	**ON** *or* **OFF**	Status of Slot Credit Substitutions. One of two entries: • **ON** • **OFF**	2-3
17	AC	**ON** *or* **OFF**	Adaptive Compression Status. One of two entries: • **On** • **Off**	2-3
17– #n			Multiple entries are possible containing the items listed as Field/Line 17.	48-49 per line
18	Blank Line Separator		Blank line separating data	1
19	Bridging Status	**BRIDGING STATUS AT FCAaaa: ON**	Status of bridging for individual AFPs. Same format as for GDPs	23
20	Blank Line Separator		Blank line separating data	1
21	System Bridging Status	**BRIDGING TURNED OFF PERMANENTLY FOR NON-CDM GENERAL AVIATION AND MILITARY.**	Status of bridging for the system. This applies to both GDPs and AFPs. (NOTE: This line continues out past the right margin.)	74
22	Blank Line Separator		Blank line separating data	1
23	Printer	**PRINTER:** aaaa./aaaaaaaa	Location of the printer at the command center. (NOTE: This is of no use for the NAS user.)	24

3.2.1.3.2.17   EDCT SUB SHOW

This message returns the substitution status (on or off) at all airports that currently have GDPs (sub status is also part of the EDCT LIST report) as well as the substitution status for all FCAs that have AFPs. A sample EDCT SUB SHOW report has the following format:

Sample EDCT SUB SHOW
(Line Numbers for Reference Only)

```
(1)       Current Time: 18:06:17 on 7/29/2005
(2)
(3)      Airport SUB Processing Activated SCS Processing Activated AC Active
(4)       -----------------------------------------------------------
(5)       EWR       Yes                    Yes                    Yes
(6)       JFK       No                     No                     No
(7)
(8)       Bridging status at EWR:
(9)         - Carriers which turned bridging OFF:
(10)         USA
(11)      Bridging status at JFK: ON.
(12)
(13)      FCA     SUB Processing Activated SCS Processing Activated AC Active
(14)       -----------------------------------------------------------
(15)      FCAA02    Yes                    Yes                    No
(16)
(17)      Bridging status at FCAA02: ON.
(18)
(19)      Bridging turned OFF permanently for non-CDM general aviation …
(20)
(21)      Printer: $fsa.//wkstn32
```

Table 3-XVII below presents a breakout of the EDCT Sub Show

Table 3-XVII. EDCT Sub Show

Field/Line	Designation	Unit/Format	Description	Bytes
1	Current Time and Date	**CURRENT TIME:** dd:dd:dd **ON** d[d]/d[d]/dddd	Current Time and Date of message in format *hh:mm:ss* on *M[M]/D[D]/YYYY* • hh – hour • mm – minute • ss – second • M[M] – Month in one or two digits • D[D] – day in one or two digits • YYYY – Year	40
2	Blank Line Separator		Blank line separating data	1

Field/Line	Designation	Unit/Format	Description	Bytes
3	GDP Headers	**AIRPORT SUB PROCESSING ACTIVATED SCS PROCESSING ACTIVATED AC ACTIVATED**	Column Headers: • Airport – Destination Airport • Sub Processing Activated– Substitution Processing on or off • SCS Processing Activated – Slot Control Substitution Processing on or off • Adaptive Compression Activated on or off	59
4	Dashed Line Separator	-------------------- --------------------	Dashed line separator	49
5	Airport	Laa[a]	Destination airport in three or four character identifier. This entry is padded with spaces to equal 11 bytes.	11
5	Sub Processing	**YES** *or* **NO**	Substitution Processing Status. One of two entries: • **YES** • **NO** This entry is padded with spaces to equal 26 bytes.	26
5	SCS Processing	**YES** *or* **NO**	Substitution Processing Status. One of two entries: • **YES** • **NO**	2-3
5	AC Activated	**YES** *or* **NO**	Adaptive Compression Status. One of two entries: • **YES** • **NO**	2-3
6 – #n			Multiple entries are possible containing the items listed as Field/Line 5.	48-49 per line
7	Blank Line Separator		Blank line separating data	1
8	Bridging Status	**BRIDGING STATUS AT** Laa:	Status of bridging for individual GDPs.	23
9	Bridging Off	**- CARRIERS WHICH TURNED BRIDGING OFF:**	If bridging is off, the report lists each carrier that currently has bridging off for that GDP. This field is led by two blank spaces.	39

Field/Line	Designation	Unit/Format	Description	Bytes
10	Carrier List	LLL [LLL]	Carriers which have turned Bridging off. This field is led by 4 blank spaces.	3-68
11	Bridging Status	**BRIDGING STATUS AT** Laa: **ON**	Status of bridging for individual GDPs, indicating Bridging is ON.	28
12	Blank Line Separator		Blank line separating data	1
13	FCA Header	**FCA SUB PROCESSING ACTIVATED SCS PROCESSING ACTIVATED AC ACTIVATED**	Column Headers: • FCA – FCA Number • Sub Processing Activated– Sub Processing on or off • SCS Processing Activated – Slot Control Substitution processing on or off • Adaptive Compression Activated on or off	59
14	Dashed Line Separator	**-------------------- -------------------- -----------**	Dashed line separator	49
15	FCA Identifier	**FCA**aaa	FCA in six character identifier. This entry is padded with spaces to equal 8 bytes.	8
15	Sub Processing	**YES** *or* **NO**	Substitution Processing Status. One of two entries: • **YES** • **NO** This entry is padded with spaces to equal 26 bytes.	26
15	SCS Processing	**YES** *or* **NO**	Substitution Processing Status. One of two entries: • **YES** • **NO**	2-3
15	AC Active	**Yes** *or* **No**	Adaptive Compression Status. One of two entries: • **YES** • **NO**	2-3
15– *#n*			Multiple entries are possible containing the items listed as Field/Line 17.	48-49 per line
16	Blank Line Separator		Blank line separating data	1

Field/Line	Designation	Unit/Format	Description	Bytes
17	Bridging Status	**BRIDGING STATUS AT FCAaaa: ON**	Status of bridging for individual AFPs. Same format as for GDPs.	23
18	Blank Line Separator		Blank line separating data	1
19	System Bridging Status	**BRIDGING TURNED OFF PERMANENTLY FOR NON-CDM GENERAL AVIATION AND MILITARY.**	Status of bridging for the system. This applies to both GDPs and AFPs. (NOTE: This line continues out past the right margin.)	74
20	Blank Line Separator		Blank line separating data	1
21	Printer	**PRINTER:** aaaa./aaaaaaaa	Location of the printer at the command center. (NOTE: This is of no use for the NAS user.)	24

3.2.1.3.2.18   EDCT SLIST

The EDCT SLIST request returns the same format used to issue a GDP/AFP, or to reply to an SS message. A sample EDCT SLIST report (for an AFP) has the following format:

Sample EDCT SLIST (for an AFP)
(Line Numbers for Reference Only)

```
(1)   SLOT LIST FOR FCAA02
(2)
(3)   ACID      ASLOT           DEP  ARR  CTD     CTA    TYPE EX CX SH  EENTRY   IGTD
(4)   ABC1234 FCAA02.260400A DCA  LGA  260300  260400 AFP  -  -  -   260400   260245
      ABC5678 FCAA02.260500A IAD  BOS  260400  260500 AFP  -  -  -   260300   260145
      ABC360  FCAA02.260323A CYYZ LGA  260206  260323 AFP  Y  -  -   260319   260150
      ABC3522 FCAA02.260311A DCA  BOS  260215  260311 AFP  -  -  -   260311   260145
      ABC39   FCAA02.260353A ROC  LGA  260246  260353 AFP  -  Y  -   260355   260235
```

For an FCA in an Active CTOP, the EDCT SLIST request will only be available on an FCA basis. This implies that a request can be done for an FCA in an active CTOP but not for the CTOP. A sample EDCT SLIST report (for an FCA in an Active CTOP) has the following format:

Sample EDCT SLIST (for an FCA in an Active CTOP)
(Line Numbers for Reference Only)

```
(1)   SLOT LIST FOR FCAA02
(2)
(3)   ACID      ASLOT           DEP  ARR  CTD     CTA    TYPE EX CX SH  EENTRY   IGTD
```

```
(4)   ABC1234 FCAA02.260400Z DCA  LGA  260300 260400 UPD  -  -  -   260400    260245
      ABC5678 FCAA02.260500Z IAD  BOS  260400 260500 UPD  -  -  -   260300    260145
      ABC360  FCAA02.260323Z CYYZ LGA  260206 260323 UPD  -  -  -   260319    260150
      ABC3522 FCAA02.260311Z DCA  BOS  260215 260311 UPD  -  -  -   260311    260145
      ABC39   FCAA02.260353Z ROC  LGA  260246 260353 UPD  -  -  -   260355    260235
```

Table 3-XVIII below presents a breakout of the EDCT SLIST

Table 3-XVIII. EDCT SLIST

Field/Line	Designation	Unit/Format	Description	Bytes
1	Slot List Identifier	**SLOT LIST FOR FCA**aaa *or* **SLOT LIST FOR** aaa	Identifies airport or FCA that the slot list is for.	17-20
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA (or) EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold flag (Yes or No) • EENTRY – Earliest Entry Time (for AFP) *or* ERTA - Earliest Runway Time of Arrival (for Airport GDP) • IGTD - Initial Gate Time of Departure	52
4 - *n*	Slot List Data Fields		Refer to Table 3-XIV for descriptions of Line 4 – n entries.	

3.2.1.3.2.19   EDCT UNASSIGNED SLOTS

The EDCT UNASSIGNED SLOTS will contain a list of unassigned slots that have
not yet been allocated to flights. An example is provided below, followed by a
detailed breakout in Table XIX.

Sample Unassigned Slots Blocks

```
(1) EDCT UNASSIGNED SLOTS
(2)
(3) EWR.191233A EWR.191234A EWR.191235A EWR.191236A EWR.191237A EWR.191238A
(4) EWR.191241A EWR.191242A EWR.191243A EWR.191442A EWR.191245A EWR.191246A
(5) EWR.191249A EWR.191250A EWR.191251A EWR.191252A EWR.191253A EWR.191254A

(1) EDCT UNASSIGNED SLOTS
(2)
(3) FCA027.191233A FCA027.191234A FCA027.191235A FCA027.191236A FCA027.191237A
(4) FCA027.191241A FCA027.191242A FCA027.191243A FCA027.191442A FCA027.191245A
(5) FCA027.191249A FCA027.191250A FCA027.191251A FCA027.191252A FCA027.191253A
```

Table 3-XIX. EDCT UNASSIGNED SLOTS

Line	Function	Unit/Format	Description	Bytes
1	Unassigned Slots title	**EDCT UNASSIGNED SLOTS**	Static Entry: **EDCT UNASSIGNED SLOTS**	21
2	Blank Line		Blank Line Separator	1

3-n	Unassigned Slot entries	LLL.ddddddda (GDP) or **FCA**aaa.ddddddda (AFP) or **NONE** (Empty)	The block contains a list of unassigned slots that have not yet been allocated to flights. Two different entries are used:
			▪ GDP – The formatting for GDP is
			  – Airport Name – three letters
			  – Slot number – six digits, followed by one alphanumeric character.
			▪ AFP – The formatting for AFP is
			  – FCA Identifier – three letters FCA followed by three alphanumeric characters
			  – Slot number – six digits,
				15 – 75*

Line	Function	Unit/Format	Description	Bytes
			followed by one alphanumeric character.	
* Size is for a single line. Each line may contain a maximum of 5 unassigned slots.				

3.2.1.3.2.20   BRIDGING ON

The BRIDGING ON message is used to restore bridging eligibility for the sending airline's flights in a particular delay program. The airline's flights can now be used as Slot Credit Substitution bridges. A sample message has the following format:

Sample BRIDGING ON Request

```
EDCT BRIDGING ON LGA
```

Table 3-XX below presents a breakout of the BRIDGING ON request.

Table 3-XX.BRIDGING ON Request

Field/Line	Designation	Unit/Format	Description	Bytes
1	Bridging On	**EDCT BRIDGING ON** Laa[a]	Bridging On indicator for airport in three or four digits	20-21

The BRIDGING ON request is confirmed by the TFMS issuing a response. The response has the following format:

Sample Bridging On Response

```
Turned BRIDGING ON for AAL at LGA.
```

Table 3-XXI below presents a breakout of the BRIDGING ON Response.

Table 3-XXI. BRIDGING ON Response

Field/Line	Designation	Unit/Format	Description	Bytes
1	Bridging On Response Indicator	**Turned BRIDGING ON for** LLL **at** Laa[a]	BRIDGING ON Response for a specific airline at a specific airport in three or four digits	34-35

3.2.1.3.2.21   BRIDGING OFF

The BRIDGING OFF message temporarily disables flights for the sending airline from being used as part of an SCS bridge in a particular GDP. A sample message has the following format:

Sample BRIDGING OFF Request

```
EDCT BRIDGING OFF LGA
```

Table 3-XXII below presents a breakout of the BRIDGING OFF Request.

Table 3-XXII. BRIDGING OFF Request

Field/Line	Designation	Unit/Format	Description	Bytes
1	Bridging Off	**EDCT BRIDGING OFF** Laa[a]	BRIDGING OFF indicator for airport in three or four digits	21-22

The BRIDGING OFF request is confirmed by the TFMS issuing a response. The response has the following format:

Sample BRIDGING OFF Response

```
Turned BRIDGING OFF for AAL at LGA.
```

Table 3-XXIII below presents a breakout of the BRIDGING OFF Response.

Table 3-XXIII. BRIDGING OFF Response

Field/Line	Designation	Unit/Format	Description	Bytes
1	Bridging Off Indicator	**TURNED BRIDGING OFF FOR** LLL **AT** Laa[a]	BRIDGING OFF indicator for a specific airline at a specific airport in three or four digits	35-36

3.2.1.3.2.22   Unsolicited Messages

During a GDP, AFP or GS, TFMS will send messages to the airlines when changes are made in the TFMS database, affecting that airline's flights. These messages are:

- Slot List Message
- Substitutions Status
- GDP Termination
- EDCT Update Message
- Delay Assignment   (DAS) Delay Message
- General Aviation Airport Programs Slot Assignment Message
- SCS Bridging Update Message
- UDP Bridging Update Message
- ECR Update Message
- SCS Status Message

- Dropout Flight Message
- Recontrol Message
- Substitution Message
- Hold/Release All Slots Message
- Timeout Cancelled Flights Message
- Reinstated Flight Message
- Flight ID Change Message
- Diversion Flight/Diversion Recoveries Message
- Adaptive Compression Update
- Scope Reduction Message
- EDCT Adaptive Compression On Message
- EDCT Adaptive Compression Off Message
- Bridging On Response Message
- Bridging Off Response Message

A CTOP provides more information than just control times for flights, such as an assigned route. A subset of the unsolicited messages will be sent for CTOP flights, only to provide information for the flights in a CTOP that have received an assigned control time. If the additional CTOP information is required, the details for this can be found in Appendix D.

In order to provide CTOP assigned control times to Legacy AOCNet clients, the following legacy unsolicited messages will be distributed:

- Slot List Message
- EDCT Update Message
- Delay Assignment (DAS) Delay Message
- Dropout Flight Message
- Recontrol Message
- Timeout Cancelled Flights Message
- Reinstated Flight Message
- Flight ID Change Message
- Scope Reduction Message

For these messages, the Control Type for CTOP flights will be one of the following:

- UPD for any flight initially assigned an EDCT by CTOP or manually assigned EDCT.
- DAS if the flight is a pop-up or newly included into an existing CTOP.
- RCTL if a flight moves to an Active CTOP from another TMI or from one CTOP to a lower ranking CTOP.

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Within a CTOP, a flight can be assigned an EDCT without an explicit slot assignment or a "NOSLOT" assignment (for more information on CTOP messages, see Appendix D). Because the ASLOT is a defined field within a subset of the messages, for any CTOP flight that has a "NOSLOT" indicator or does not have an assigned slot, the ASLOT field will contain the entry time into the flights primary FCA. Additionally, the EENTRY and CTA fields for the flight will contain the entry time into that primary FCA based on the flight's EDCT and the time to fly to its intersection with the primary FCA. In the case where more than one of a CTOP's FEA/FCAs is intersected by a flight's trajectory, the first intersected FEA/FCA is considered to be the primary FEA/FCA.

Table 3-XXIV presents details of data fields shared by the various Unsolicited Messages.

Table 3-XXIV. Unsolicited Messages Data Fields

Field/Line	Designation	Unit/Format	Description	Bytes
3	Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival *or* EENTRY – Earliest Entry Time • IGTD - Initial Gate Time of Departure	65
3 - *n*	Data Fields		Refer to Table 3-XIV for descriptions of Line 3 – n entries.	

3.2.1.3.2. 22.1   Slot List

When a GDP, GS AFP or CTOP is initially issued or revised, the user can receive a slot list at one or more AOCNET addresses. The slot list provides a complete list of the flights with an EDCT involved in the GDP, GS, AFP or an FCA in a CTOP for that user. For a GDP, GS or AFP, the slot list will also include flights that have been cancelled. A sample Slot List message for a user has the following format:

Sample Slot List for a GDP

```
FOR LGA DESTINATION AIRPORT
ATCSCC EDCT FLOW CONTROL DEPARTURE TIME
ACID    ASLOT       DEP ARR CTD    CTA    TYPE EX CX SH ERTA   IGTD
ABC1234 LGA.260400A DCA  LGA  260300 260400 GDP  -  -  -  260400 260245
ABC5678 LGA.260500A IAD  LGA  260400 260500 GDP  -  -  -  260300 260145
ABC3601 LGA.260323A BOS  LGA  260206 260323 GDP  Y  -  -  260319 260150
ABC3522 LGA.260311A DCA  LGA  260215 260311 GDP  -  -  -  260311 260145
ABC3994 LGA.260353A ROC  LGA  260246 260353 GDP  -  Y  -  260355 260235
```

Sample Slot List for an AFP

```
FOR FCAA02
ATCSCC EDCT FLOW CONTROL DEPARTURE TIME
ACID    ASLOT         DEP ARR CTD    CTA    TYPE EX CX SH EENTRY IGTD
ABC1234 FCA002.260400A DCA  LGA  260300 260400 AFP  -  -  -  260400 260245
ABC5678 FCA002.260500A IAD  LGA  260400 260500 AFP  -  -  -  260300 260145
ABC3601 FCA002.260323A BOS  LGA  260206 260323 AFP  Y  -  -  260319 260150
ABC3522 FCA002.260311A DCA  LGA  260215 260311 AFP  -  -  -  260311 260145
ABC3994 FCA002.260353A ROC  LGA  260246 260353 AFP  -  Y  -  260355 260235
```

Sample Slot List for a CTOP

```
FOR FCAA02
ATCSCC EDCT FLOW CONTROL DEPARTURE TIME
ACID    ASLOT         DEP ARR CTD    CTA    TYPE EX CX SH EENTRY IGTD
ABC1234 FCA002.260400Z DCA  LGA  260300 260400 UPD  -  -  -  260400 260245
ABC5678 FCA002.260500Z IAD  LGA  260400 260500 UPD  -  -  -  260300 260145
ABC3601 FCA002.260323Z BOS  LGA  260206 260323 UPD  -  -  -  260319 260150
ABC3522 FCA002.260311Z DCA  LGA  260215 260311 UPD  -  -  -  260311 260145
ABC3994 FCA002.260353Z ROC  LGA  260246 260353 UPD  -  -  -  260355 260235
```

Table 3-XIV presents a breakout of the Slot List Headers and Data Fields shown above in lines 3-n.

3.2.1.3.2.22.2   Substitution Status

A message is sent whenever the FAA turns the substitution processing on or off at an airport or FCA. Airline substitution messages are rejected when substitutions are turned off. This is typically done just before a GDP or AFP is revised so that the TFMS and airline databases will stay synchronized. A sample of each type follows:

Sample Substitution Status Messages

```
EDCT SUB OFF LGA

EDCT SUB ON FCAA02
```

Table 3-XXV below presents a breakout of the Substitution Status.

Table 3-XXV. Substitution Status Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Substitution Status	**EDCT SUB [ON] OFF** Laa[a] or **EDCT SUB [ON]OFF FCA**aaa	Substitution Status indicator for a specific airport in three or four characters or specific FCA in six characters.	16-21

3.2.1.3.2.22.3   GDP Termination (Via EDCT PURGE)

The FAA terminates a GDP, AFP or GS by using an EDCT PURGE command to clear the controls out of the TFMS database. The airline will get a copy of the EDCT PURGE commands along with a Slot List of that airline's affected flights (i.e., the flights no longer controlled by the terminated delay program). A sample EDCT PURGE message follows:

Sample EDCT Purge Message (for an AFP)

```
   EDCT PURGE FCAA02
ACID     ASLOT          DEP ARR CTD    CTA    TYPE EX CX SH  EENTRY   IGTD
ABC1234 FCAA02.260400A DCA  LGA 260300 260400 AFP  -  -  -   260400   260245
ABC5678 FCAA02.260500A IAD  BOS 260400 260500 AFP  -  -  -   260300   260145
ABC360  FCAA02.260323A CYYZ LGA 260206 260323 AFP  Y  -  -   260319   260150
ABC3522 FCAA02.260311A DCA  BOS 260215 260311 AFP  -  -  -   260311   260145
ABC39   FCAA02.260353A ROC  LGA 260246 260353 AFP  -  Y  -   260355    260235
```

Table 3-XXVI below presents a breakout of the EDCT Purge Message.

Table 3-XXVI. EDCT Purge Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	EDCT Purge Identifier	**EDCT PURGE FCA**aaa	Identifies airport or FCA that the EDCT Purge is for.	14-17

Field/Line	Designation	Unit/Format	Description	Bytes
		or **EDCT PURGE** aaa		
2	Slot List Data Headers	**ACID** **ASLOT** **DEP ARR** **CTD CTA** **TYPE EX CX** **SH ERTA or** **EENTRY** **IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65
3 - *n*	Slot List Data Fields		Refer to Table 3-XIV for descriptions of Line 3 – n entries.	

3.2.1.3.2.22.4   EDCT Update

The FAA can manually update the data for a controlled flight using an internal command called EDCT UPDATE. Additionally, flights in a CTOP can also have EDCTs updated through a manual override. When this occurs, the airline will get an unsolicited message whenever the EDCT is manually updated, (including affiliated airlines). The update is simply a new slot list including the one flight that was changed by FAA

NOTE: When TFMS creates a slot for a flight in response to an EDCT UPDATE command from the FAA, it uses a letter suffix of "P" or later to ensure that the slot name will not conflict with a slot name created by FSM. FSM assigns suffixes starting with the letter "A". Unique slot names are required to allow these flights to be substituted. For slots that are generated by the CTOP, the letter "Z" is used.

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A sample EDCT UPDATE message has the following format:

Sample EDCT Update Message

```
(1)  EDCT UPDATE FOR LGA
(2)
(3) ACID      ASLOT    DEP ARR CTD   CTA   TYPE EX CX SH  ERTA    IGTD
(4) ABC1593 LGA.252100P ORD  LGA  251641 252100 UPD  -  -  -  252034  251623
```

Table 3-XXVII below presents a breakout of the EDCT Update Message.

Table 3-XXVII. EDCT Update Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	EDCT Update Identifier	**EDCT UPDATE FOR FCAaaa** *or* **EDCT UPDATE FOR aaa**	Identifies airport or FCA that the EDCT Update is for.	19-22
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an	65

Field/Line	Designation	Unit/Format	Description	Bytes
			Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	
4	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 entries.	

3.2.1.3.2.22.5 Delay Assignment (DAS) Delay

The airline will get this message whenever a DAS delay is applied to one of its flights. The update is simply a new slot list including the one flight that was assigned a slot by TFMS. Additionally, to support sending EDCTs for CTOP flights on this data feed, the DAS message will be sent for any CTOP flight that is newly included into a CTOP and receives an EDCT. The control type for these flights will set to DAS to reflect that the flight has received an EDCT from a CTOP program, regardless of whether the flight has received a delay assignment from the CTOP.

NOTE: When TFMS creates a slot by assigning a DAS-delay to a pop-up, it uses a letter suffix of "Z" in the slot name. "Z" slots are not assured to be unique. Since a DAS-delayed flight cannot be used in substitutions, the slot name is not required to be unique.

A sample DAS DELAY message for an airline has the following format:

Sample DAS Delay Message

```
DAS DELAY FOR FCAA02

ACID    ASLOT           DEP ARR CTD    CTA    TYPE EX CX SH EENTRY  IGTD
ABC1593 FCAA02.252100Z ORD LGA  251641 252100 DAS  -  -  -  252034  251623
```

Table 3-XXVIII below presents a breakout of the DAS Delay Message.

Table 3-XXVIII. DAS Delay Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	DAS Delay Identifier	**DAS DELAY FOR FCA**aaa *or* **DAS DELAY FOR** aaa	Identifies airport or FCA that the DAS Delay is for.	17-21
2	Blank Line Separator		Blank line separating data	1

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Field/Line	Designation	Unit/Format	Description	Bytes
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65
4	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 entries.	

3.2.1.3.2.22.6   General Aviation Airport Program (GAAP) Slot Assignment

The user will get this message whenever an unassigned slot is applied to one of its flights in a GAAP or UDP mode program. The update is simply a new slot list including the one flight that was assigned to the slot.

A sample GAAP SLOT message for a user has the following format:

Sample GAAP Slot Assignment Message

```
GAAP SLOT FOR LGA

ACID    ASLOT      DEP ARR CTD    CTA    TYPE EX CX SH ERTA    IGTD
ABC1593 LGA.252100A ORD  LGA  251641 252100 GAAP -  -  -  252034  251623
```

Table 3-XXIX below presents a breakout of the GAAP Slot Assignment Message.

Table 3-XXIX. GAAP Slot Assignment Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	GAAP Slot Identifier	**GAAP SLOT FOR FCA**aaa *or* **GAAP SLOT FOR** aaa	Identifies airport or FCA that the GAAP slot list is for.	17-21
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Headers for the data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65
4	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 entries.	

3.2.1.3.2.22.7 SCS Bridging Update

The airline will get this message whenever one or more of its flights is used to create a bridge for an SCS request. A bridging update will only move a flight to an earlier time.

An SCS request can be initiated in three ways. If the request is sent by a user or by the FAA (using the ECR tool), TFMS will give the bridged flights control types of SBRG. If the request is generated internally by TFMS during adaptive compression, TFMS will give the flights control types of ABRG.

A sample SCS BRIDGING UPDATE message for an airline has the following format:

Sample SCS Bridging Update Message

```
SCS BRIDGING UPDATE FOR FCAA02

ACID    ASLOT          DEP ARR CTD    CTA    TYPE EX CX SH EENTRY IGTD
ABC1593 FCAA02.252100A ORD  LGA 251641 252100 SBRG -  -  -  252034 251623
```

Table 3-XXX below presents a breakout of the SCS Bridging Update Message.

Table 3-XXX. SCS Bridging Update Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	SCS Bridging Identifier	**SCS BRIDGING UPDATE FOR FCA**aaa *or* **SCS BRIDGING UPDATE FOR** aaa	Identifies airport or FCA that the SCS Bridging is for.	27-30
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No)	65

Field/Line	Designation	Unit/Format	Description	Bytes
			• ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	
4-*n*	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 – n entries.	

3.2.1.3.2.22.8   UDP Bridging Update

The airline will get this message whenever one or more of its flights is used to create a bridge as a result of UDP pop-up processing. A bridging update will only move a flight to an earlier time. A sample UDP BRIDGING UPDATE message for an airline has the following format:

Sample UDP Bridging Update Message

```
UDP BRIDGING UPDATE FOR FCAA02

ACID    ASLOT          DEP  ARR  CTD    CTA    TYPE EX CX SH EENTRY IGTD
ABC1593 FCAA02.252100A ORD  LGA  251641 252100 UBRG -  -  -  252034 251623
```

Table 3-XXXI below presents a breakout of the UDP Bridging Update Message.

Table 3-XXXI. UDP Bridging Update Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	UDP Bridging Identifier	**UDP BRIDGING UPDATE FOR FCA**aaa *or* **UDP BRIDGING UPDATE FOR** aaa	Identifies airport or FCA that the SCS Bridging is for.	27-30
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA**	Header for the following data fields: • ACID – Aircraft identifier	65

Field/Line	Designation	Unit/Format	Description	Bytes
		TYPE EX CX SH **ERTA or EENTRY** **IGTD**	• ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	
4-*n*	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 – n entries.	

3.2.1.3.2.22.9   ECR Update

When a flight misses its EDCT window, the FAA will request a new EDCT for that flight using the ECR Tool. The ECR Tool allows the traffic manager to first make an SCS request. If that fails, the traffic manager can then make an EDCT Update request. An ECR-generated EDCT Update request looks like any other EDCT Update; the user is notified via the unsolicited EDCT Update message, described earlier in this section. An ECR-generated SCS request, if successful, will look slightly different to the user. The unsolicited message sent will have the same header as the SCS Bridging Update. However, the flight for which the EDCT change was requested will have a control type of ECR. The slot list may also include flights for that user that were bridged as part of the request. A sample SCS BRIDGING UPDATE message that includes an ECR flight has the following format:

Sample SCS Bridging Update Message that includes an ECR flight

```
SCS BRIDGING UPDATE FOR LGA

ACID    ASLOT      DEP ARR CTD    CTA    TYPE EX CX SH ERTA    IGTD
```

```
ABC1593 LGA.252100A ORD  LGA  251641 252100 ECR  -  -  -  252034 251623
ABC264  LGA.252043B DFW  LGA  251737 252043 BRG  -  -  -  252043 251705
```

Refer to Table 3-XXX above for a breakout of the SCS Bridging Message including an ECR flight.

3.2.1.3.2.22.10   SCS Status

A message is sent whenever the FAA turns the SCS processing on or off at an airport. Airline SCS messages are rejected when SCS is turned off. A sample of each type follows:

Sample SCS Status Messages (for a GDP)

```
EDCT SCS OFF LGA

EDCT SCS ON LGA
```

Table 3-XXXII below presents a breakout of the Substitution Status message for a GDP

Table 3-XXXII. SCS Status Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	EDCT SCS Status	**EDCT SCS [ON] OFF** Laa[a] *or* **EDCT SCS [ON] OFF FCA**aaa[a]	EDCT Slot Credit Substitution Status for a specific airport, in three or four digits or an FCA in 6 or seven digits	15-22

3.2.1.3.2.22.11   DROPOUT FLIGHT Message

When a flight drops out of an FCA, perhaps due to a reroute, and therefore is no longer controlled by an AFP for that FCA, a message will be sent to the user indicating that the flight is no longer controlled. The message shows the control times and slot at the time the flight was rerouted.

To support CTOP processing, the DROPOUT message will be used when a flight no longer has an EDCT from a CTOP program. This does not necessarily indicate that the flight is no longer controlled by the CTOP, as the flight may still have a route assigned by the CTOP.

NOTE: Once a flight drops-out of an AFP, the slot that belonged to that flight is no longer available for substitution or compression. The slots assigned by CTOP are marked with a suffix "Z".

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A sample DROPOUT FLIGHT message for a user has the following format:

Sample DROPOUT FLIGHT Message (for an AFP)

```
DROPOUT FLIGHT FOR FCAA02

ACID    ASLOT          DEP ARR CTD    CTA     TYPE EX CX SH EENTRY IGTD
ABC1593 FCAA02.252100A ORD LGA 251830 252100 AFP  Y  -  -  252034 251623
```

Sample DROPOUT FLIGHT Message (for a CTOP)

```
DROPOUT FLIGHT FOR FCAA02

ACID    ASLOT          DEP ARR CTD    CTA     TYPE EX CX SH EENTRY IGTD
ABC1593 FCAA02.252100Z ORD LGA 251830 252100 UPD  -  -  -  252034 251623
```

Table 3-XXXIII below presents a breakout of the Dropout Flight Message.

Table 3-XXXIII. DROPOUT FLIGHT Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Dropout Flight Identifier	**DROPOUT FLIGHT FOR FCA**aaa	Identifies airport or FCA that the Dropout Flight is for.	22-25
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA (or) EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No)	65

Field/Line	Designation	Unit/Format	Description	Bytes
			• ERTA – Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	
4	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 entries.	

3.2.1.3.2.22.12 RECONTROL Message

There are two cases, other than the issuing of a GDP, AFP or a CTOP in which the control of a flight might transfer from an AFP or CTOP to another:

• A flight might drop out of one AFP or CTOP and immediately be eligible for another.

• The controlling program for a flight may be purged, making it eligible for another AFP or CTOP.

In either case, a message will first be sent to the user indicating that the flight is no longer controlled by the original AFP, GDP or CTOP followed by another message indicating the flight is now controlled by a new element. If the flight was a pop-up in the prior AFP GDP and the control does not shift into a CTOP, the user will receive a new pop-up message. If the flight was not a pop-up and could be subbed in the prior GDP or AFP, and control has shifted into another GDP or AFP, a RECONTROL message will be sent, indicating that the flight can be subbed in the new program. If a flight's control shifts from any other control element to a CTOP, a RECONTROL message will be sent, however subbing for CTOP flights is not available on this data feed. The flight will be assigned a control type of "RCTL". NOTE: When TFMS creates a slot for a re-controlled flight, it uses a letter suffix of "P" or later to ensure that the slot name will not conflict with a slot name created by FSM. FSM assigns suffixes starting with the letter "A". Unique slot names are required to allow these flights to be substituted
The slots assigned by CTOP are marked with a suffix "Z" and cannot be substituted using this data feed.

A sample RECONTROL message for a user has the following format:

Sample RECONTROL Message (for an AFP)

```
RECONTROL FOR FCAA02

ACID    ASLOT           DEP ARR CTD    CTA    TYPE EX CX SH EENTRY   IGTD
ABC1593 FCAA02.252100P ORD LGA 251830 252100 RCTL Y  -  -  252034   251623
```

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Sample RECONTROL Message (for a CTOP)

```
RECONTROL FOR FCAA02

ACID    ASLOT         DEP ARR CTD    CTA    TYPE EX CX SH EENTRY   IGTD
ABC1593 FCAA02.252100Z ORD LGA 251830 252100 RCTL -  -  -  252034   251623
```

Table 3-XXXIV below presents a breakout of the Re-control message.

Table 3-XXXIV. RECONTROL Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Re-control Identifier	**RECONTROL FOR FCAaaa** *or* **RECONTROL FOR aaa**	Identifies airport or FCA that the Re control is for.	17-20
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65

Field/Line	Designation	Unit/Format	Description	Bytes
4	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 entries.	

3.2.1.3.2.22.13 SUBSTITUTION Message

When a user successfully substitutes flights, TFMS sends a response confirming the new control times for those flights. The user who generated the request, and/or the application from which the request was sent, therefore know that these flights have been updated. However, other people from that user's organization and other applications the user may run do not necessarily know that these flights have changed. In order to allow a person or application to have a single source of all control time changes, TFMS will send a copy of any successful substitution request out as an unsolicited message.

Section 3.2.1.3.2.14 describes the reply format for a successful substitution request. The unsolicited message format contains the same slot list but has a slightly different header to better identify the message and to be consistent with the other unsolicited messages.

A sample SUBSTITUTION message for a user has the following format:

Sample SUBSTITUTION Message (for a GDP)

```
SUBSTITUTION FOR LGA

ACID     ASLOT       DEP ARR  CTD    CTA    TYPE EX CX SH ERTA   IGTD
ABC1234 LGA.260500A DCA  LGA  260400 260500 SUB  - Y - -        260145
ABC5678 LGA.260400A IAD  LGA  260300 260400 SUB  - - - 260400 260245
```

Table 3-XXXV below presents a breakout of the Substitution message.

Table 3-XXXV. SUBSTITUTION Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Substitution Identifier	**SUBSTITUTI ON FOR FCA**aaa *or* **SUBSTITUTI ON FOR** aaa	Identifies airport or FCA that the Re control is for.	20-23
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot	65

Field/Line	Designation	Unit/Format	Description	Bytes
		SH **ERTA or** **EENTRY** **IGTD**	• DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	
4-*n*	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 – n entries.	

3.2.1.3.2.22.14   HOLD/RELEASE ALL SLOTS Message

When a user submits a HOLD ALL SLOTS or RELEASE ALL SLOTS request, TFMS sends a response listing the cancelled flights that were modified. Consistent with other substitution requests, TFMS sends the response to the requestor. However, another user application listening for changes will not know these flights have changed status. Therefore, TFMS also sends a copy of any successful HOLD ALL SLOTS or RELEASE ALL SLOTS request out as an unsolicited message.

Section 3.2.1.3.2.14 describes the reply format for a successful substitution request, which includes the HOLD ALL/RELEASE ALL response (in the form of a packet accept and an updated slot list. The unsolicited message format contains the same slot list but has a slightly different header to better identify the message and to be consistent with the other unsolicited messages. A sample HOLD ALL SLOTS unsolicited message for a user has the following format:

Sample HOLD ALL SLOTS Message

```
HOLD ALL SLOTS FOR LGA
```

```
ACID     ASLOT       DEP ARR CTD    CTA    TYPE EX CX SH ERTA   IGTD
ABC1234 LGA.260500A DCA  LGA 260400 260500 SUB  -  Y  Y  -      260145
ABC5678 LGA.260400A IAD  LGA 260300 260400 SUB  -  -  Y  260400 260245
```

Table 3-XXXVI below presents a breakout of the HOLD ALL SLOTS Request.

Table 3-XXXVI. HOLD ALL SLOTS Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Hold All Slots	**HOLD ALL SLOTS FOR** Laa[a]	Hold All Slots indicator for a specific airport in three or four alphanumeric or for a specific FCA in six alphanumeric.	22-25
2	blank line separator			1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65
4 - n	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 – n entries.	

A sample RELEASE ALL SLOTS unsolicited message for a user has the following format:

Sample RELEASE ALL SLOTS Message

```
RELEASE ALL SLOTS FOR FCAA01

ACID    ASLOT          DEP ARR CTD    CTA    TYPE EX CX SH EENTRY  IGTD
ABC1234 FCAA01.260500A DCA  LGA 260400 260500 SUB  -  Y  -  260430 260145
ABC5678 FCAA01.260400A IAD  LGA 260300 260400 SUB  -  -  -  260400 260245
```

Table 3-XXXVII below presents a breakout of the RELEASE ALL SLOTS message.

Table 3-XXXVII. RELEASE ALL SLOTS Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Release All Slots	**RELEASE ALL SLOTS FOR** Laa[a] or FCAaaa	Release All Slots indicator for a specific airport in three or four alphanumeric or for a specific FCA in six alphanumeric.	25-28
2	blank line separator			1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65

Field/Line	Designation	Unit/Format	Description	Bytes
4 - n	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 – n entries.	

3.2.1.3.2.22.15 TIMEOUT CANCELLED Flight Message

When a flight's departure time falls too far into the past (90-minutes for US and Canada departures), TFMS cancels the flight. This can cause a flight to be compressed to the end of a program (GDP or AFP). To help avoid this happening for flights that the user is still planning to operate, TFMS will send a message to the user notifying them that a controlled flight has been timeout cancelled. The message will show the control times for the flight at the time it was cancelled.

A sample TIMEOUT CANCEL message for a user has the following format:

Sample Timeout Cancelled Flight Message (for an AFP)

```
 TIMEOUT CANCEL FOR FCAA02

ACID    ASLOT          DEP ARR CTD    CTA    TYPE EX CX SH EENTRY  IGTD
ABC1593 FCAA02.252100A ORD LGA 251830 252100 AFP  Y  Y  -  252034  251623
```

Sample Timeout Cancelled Flight Message (for a CTOP)

```
 TIMEOUT CANCEL FOR FCAA02

ACID    ASLOT          DEP ARR CTD    CTA    TYPE EX CX SH EENTRY  IGTD
ABC1593 FCAA02.252100Z ORD LGA 251830 252100 UPD  -  Y  -  252034  251623
```

Table 3-XXXVIII below presents a breakout of the Timeout Cancellation message.

Table 3-XXXVIII. Timeout Cancelled Flight Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Timeout Cancel Identifier	**TIMEOUT CANCEL FOR FCA**aaa *or* **TIMEOUT CANCEL FOR** aaa	Identifies airport or FCA that the Timeout Cancellation is for.	22-25
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data	**ACID**	Header for the following data	65

Field/Line	Designation	Unit/Format	Description	Bytes
	Headers	**ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	
4			Refer to Table 3-XIV above for descriptions of Line 4 entries.	

3.2.1.3.2.22.16 REINSTATED FLIGHT Message

If TFMS has sent an unsolicited message indicating a controlled flight has been cancelled, and the flight is reinstated to a status indicating it is expected to operate, TFMS will send a reinstate message to the user.

A sample REINSTATED FLIGHT message for a user has the following format:

Sample REINSTATED FLIGHT Message (for an AFP)

```
REINSTATED FLIGHT FOR FCAA02

ACID    ASLOT          DEP ARR CTD    CTA    TYPE EX CX SH EENTRY IGTD
ABC1593 FCAA02.252100A ORD LGA 251830 252100 AFP  Y  -  -  252034 251623
```

Sample REINSTATED FLIGHT Message (for a CTOP)

```
 REINSTATED FLIGHT FOR FCAA02

ACID    ASLOT         DEP ARR CTD    CTA    TYPE EX CX SH EENTRY IGTD
ABC1593 FCAA02.252100Z ORD LGA 251830 252100 UPD  -  -  -  252034 251623
```

Table 3-XXXIX below presents a breakout of the REINSTATED FLIGHT message.

Table 3-XXXIX. REINSTATED FLIGHT Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Timeout Cancel Identifier	**REINSTATED FLIGHT FOR FCA**aaa *or* **REINSTATED FLIGHT FOR** aaa	Identifies airport or FCA that the Timeout Cancellation is for.	25-28
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65

Field/Line	Designation	Unit/Format	Description	Bytes
4	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 entries.	

3.2.1.3.2.22.17   FLIGHT ID CHANGE Message

If the flight ID for a controlled flight changes, TFMS continues to maintain the control times and status for the flight, using the new flight ID. A flight ID change may be initiated by either a user message or an ATC message. To keep the user informed of such changes, TFMS will send a message whenever the ID is changed for a controlled flight. The message will show the current control times for the flight. To help the user correlate the change with the previous data, the message will indicate the former ID for the flight.

A sample FLIGHT ID CHANGE message for a user has the following format:

Sample FLIGHT ID CHANGE Message (for a GDP)

```
FLIGHT ID CHANGE FOR LGA

ACID     ASLOT       DEP ARR CTD    CTA    TYPE EX CX SH ERTA    IGTD
ABC593X LGA.252100A ORD LGA 251830 252100 SUB  Y  -  -  252034 251623
PREVIOUS ACID: ABC1593
```

Sample FLIGHT ID CHANGE Message (for a CTOP)

```
FLIGHT ID CHANGE FOR FCAA02

ACID     ASLOT       DEP ARR CTD    CTA    TYPE EX CX SH EENTRY IGTD
ABC593X LGA.252100Z ORD LGA 251830 252100 UPD  -  -  -  252034 251623
PREVIOUS ACID: ABC1593
```

Table 3-XL below presents a breakout of the Flight ID Change message.

Table 3-XL. Flight ID Change Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Flight Identifier Change Identifier	**FLIGHT ID CHANGE FOR FCA**aaa *or* **FLIGHT ID CHANGE FOR** aaa	Identifies airport or FCA that the Flight ID Change is for.	24-27

Field/Line	Designation	Unit/Format	Description	Bytes
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65
4	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 entries.	
5	Previous ACID	**PREVIOUS ACID:** Laa[a][a][a][a]	Aircraft identification prior to this change message.	18-22

3.2.1.3.2.22.18   DIVERSION CANCEL/DIVERSION RECOVERY Message

A controlled flight that is diverted can go through two stages:

• First, the original controlled flight is diverted to an alternate destination. In order to maintain the arrival slot in the program for that user, the original flight is diversion-cancelled in TFMS.

• If the user creates a new flight leg to operate the flight from the alternate airport to the original destination, the recovery leg assumes the control times, arrival slot, and status from the diversion-cancelled leg.

In both cases, the flight data change can be initiated by either a user message or an ATC message. In both cases, TFMS will send a message to the user indicating the change in status.

NOTE: If a diversion-cancelled flight is reinstated prior to the recovery leg being created, TFMS will send a REINSTATED FLIGHT message as described earlier in this section.

A sample DIVERSION CANCEL message for a user has the following format:

Sample DIVERSION CANCEL Message (for a GDP)

```
 DIVERSION CANCEL FOR LGA

ACID    ASLOT       DEP ARR CTD    CTA    TYPE EX CX SH ERTA   IGTD
ABC1593 LGA.252100A ORD LGA 251830 252100 GDP  Y  Y  -  252034 251623
```

A sample DIVERSION RECOVERY message for a user has the following format:

Sample DIVERSION RECOVERY Message (for a GDP)

```
 DIVERSION RECOVERY FOR LGA

ACID    ASLOT       DEP ARR CTD    CTA    TYPE EX CX SH ERTA   IGTD
ABC593A LGA.252100A ALB LGA 252025 252100 GDP  Y  Y  -  252034 251945
```

Table 3-XLI below presents a breakout of the DIVERSION CANCEL and DIVERSION RECOVERY messages.

Table 3-XLI. DIVERSION CANCEL / DIVERSION RECOVERY Messages

Field/Line	Designation	Unit/Format	Description	Bytes
1	Diversion Cancel/Recovery Identifier	**DIVERSION CANCEL FOR FCA**aaa *or* **DIVERSION CANCEL FOR** aaa --------------- **DIVERSION RECOVERY FOR FCA**aaa *or* **DIVERSION RECOVERY FOR** aaa	Identifies airport or FCA that the Diversion Cancel or Diversion Recovery is for.	24-27 (Canx) 26-29 (Recvy)

Field/Line	Designation	Unit/Format	Description	Bytes
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65
4	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 entries.	

3.2.1.3.2.22.19 ADAPTIVE COMPRESSION Update Message

The user will get this message whenever TFMS moves one or more of its slots using the adaptive compression process. The message will include the flights that are moved later, to keep their slots usable, as well as flights for that user that are moved earlier to take advantage of the compressed slots. Flights that are being moved later to keep their slots usable will be tagged with a control type of ADPT. Flights that are moved earlier to *bridge* the flights back will be given a control type of ABRG.

A sample ADAPTIVE COMPRESSION message for a user has the following format:

Sample ADAPTIVE COMPRESSION Update Message (for an AFP)

```
ADAPTIVE COMPRESSION FOR FCAA02
```

```
ACID    ASLOT          DEP ARR CTD    CTA    TYPE EX CX SH EENTRY  IGTD
ABC1234 FCAA02.260255A DCA LGA 260210 260255 ADPT - Y  -  251422  251545
ABC5678 FCAA02.251900A IAD BOS 251755 251900 ABRG - -  -  251435  251645
ABC360  FCAA02.252123A CYYZ LGA 252050 252123 ABRG - -  -  251525  251750
```

Table 3-XLII below presents a breakout of the Adaptive Compression Update message.

Table 3-XLII. Adaptive Compression Update Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Adaptive Compression Update Identifier	**ADAPTIVE COMPRESSION FOR FCA**aaa *or* **ADAPTIVE COMPRESSION FOR** aaa	Identifies airport or FCA that the Adaptive Compression Update is for.	28-31
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65
4-*n*	Slot List Data Fields		Refer to Table 3-XIV above for	

Field/Line	Designation	Unit/Format	Description	Bytes
			descriptions of Line 4 – n entries.	

3.2.1.3.2.22.20   SCOPE REDUCTION Message

If the FAA revises a GDP, AFP, GS or CTOP so that the program ends earlier and fewer flights are controlled, TFMS will send a message to each affected user listing the flights that are no longer controlled. The flight list will include the last control times assigned to the flights prior to them being dropped from the program.

A sample SCOPE REDUCTION message for a user has the following format:

Sample SCOPE REDUCTION Message (for an AFP)

```
SCOPE REDUCTION FOR FCAA02

ACID    ASLOT          DEP ARR CTD    CTA    TYPE EX CX SH EENTRY IGTD
ABC1234 FCAA02.260400A DCA  LGA 260300 260400 AFP  -  -  - 260400 260245
ABC5678 FCAA02.260500A IAD  BOS 260400 260500 AFP  -  -  - 260300 260145
ABC360  FCAA02.260323A CYYZ LGA 260206 260323 AFP  Y  -  - 260319 260150
ABC3522 FCAA02.260311A DCA  MHT 260215 260311 AFP  -  -  - 260311 260145
ABC39   FCAA02.260353A ROC  LGA 260246 260353 AFP  -  Y  - 260355 260235
```

Sample SCOPE REDUCTION Message (for a CTOP)

```
SCOPE REDUCTION FOR FCAA02

ACID    ASLOT          DEP ARR CTD    CTA    TYPE EX CX SH EENTRY IGTD
ABC1234 FCAA02.260400Z DCA  LGA 260300 260400 UPD  -  -  - 260400 260245
ABC5678 FCAA02.260500Z IAD  BOS 260400 260500 UPD  -  -  - 260300 260145
ABC360  FCAA02.260323Z CYYZ LGA 260206 260323 UPD  -  -  - 260319 260150
ABC3522 FCAA02.260311Z DCA  MHT 260215 260311 UPD  -  -  - 260311 260145
ABC39   FCAA02.260353Z ROC  LGA 260246 260353 UPD  -  -  - 260355 260235
```

Table 3-XLIII below presents a breakout of the SCOPE REDUCTION message.

Table 3-XLIII. SCOPE REDUCTION Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Scope Reduction Identifier	**SCOPE REDUCTION FOR FCA**aaa *or* **SCOPE**	Identifies airport or FCA that the Scope Reduction is for.	23-26

Field/Line	Designation	Unit/Format	Description	Bytes
		REDUCTION FOR aaa		
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA or EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for an Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of Departure	65
4-*n*	Slot List Data Fields		Refer to Table 3-XIV above for descriptions of Line 4 – n entries.	

3.2.1.3.2.22.21   EDCT ADAPTIVE COMPRESSION ON Message

Adaptive Compression is intended to avoid slots being wasted by moving flights up to fill those slots. Its purpose is to increase the efficiency of an EDCT program and to eliminate needless delay. When a ground delay program is issued, each arrival slot is assigned to a flight. Sometimes, however, it will turn out that no flight uses a slot, which is thus wasted. This might happen if a flight is cancelled and another flight is not substituted for it. It might also happen if a flight has a mechanical delay and misses its slot. The Adaptive Compression feature will watch for slots that are in danger of being wasted and will move flights up to fill those slots.

A sample ADAPTIVE COMPRESSION ON message for a user has the following
format:

Sample ADAPTIVE COMPRESSION ON Message (for an airport)

```
EDCT AC ON JFK
```

Table 3-XLIV below presents a breakout of the ADATIVE COMPRESSION ON
message.

Table 3-XLIV. ADAPTIVE COMPRESSION ON Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Adaptive Compression On Identifier	**EDCT AC ON FCA**aaa *or* **EDCT AC ON** aaa or **EDCT AC ON ALL**	Identifies airport or FCA for which adaptive compression has been turned on	14-17

3.2.1.3.2.22.22   EDCT ADAPTIVE COMPRESSION OFF Message

ADAPTIVE COMPRESSION OFF messages are use to deactivate an Adaptive
Compression. This occurs when the Adaptive Compression is no longer required for
a specific airport or FCA.

A sample ADAPTIVE COMPRESSION OFF message for a user has the following
format:

Sample ADAPTIVE COMPRESSION OFF Message (for an airport)

```
EDCT AC OFF JFK
```

Table 3-XLV below presents a breakout of the ADATIVE COMPRESSION OFF
message.

Table 3-XLV. ADAPTIVE COMPRESSION OFF Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Adaptive Compression Off	**EDCT AC OFF FCA**aaa	Identifies airport or FCA for which adaptive compression has	15-18

Field/Line	Designation	Unit/Format	Description	Bytes
	Identifier	*or* **EDCT AC** **OFF** aaa or **EDCT AC** **OFF ALL**	been turned off	

3.2.1.3.2.22.23   Bridging On Response Message

BRIDGING ON responses are sent as unsolicited messages to all users (who have subscribed to SS unsolicited messages) with subbing rights for the airline. The detailed break out of the Bridging On Response Message is described above in Section 3.2.1.3.2.20.

3.2.1.3.2.22.24   Bridging Off Response Message

BRIDGING ON responses are sent as unsolicited messages to all users (who have subscribed to SS unsolicited messages) with subbing rights for the airline. The detailed break out of the Bridging Off Response Message is described above in Section 3.2.1.3.2.21.

3.2.1.3.2.22.25   CTOP Messages

The CTOP messages identified in Table 3-I represent the automated interaction between TFMS and the AOCNET client. These messages are described in detail in Appendix D.

3.2.1.3.3 Information Unit Segmentation

TFMS is not required to perform message segmentation.

3.2.1.3.4 Direction of Information Flow

The information flow between AOCNET and TFMS is bi-directional. Refer to Table 3-XLVI for the direction of flow for CDM Application messages. Refer to Appendix C for the directional flow of CDM Session Protocol messages.

3.2.1.3.5 Frequency of Transmission

Refer to Tables 3-XLVII and 3-XLVIII for all message frequencies.

3.2.1.3.6 Responses

Refer to Section 3.2.2.1 for CDM Session Protocol message/responses that occur at the protocol level of interface data exchange. For Flight Data and Simplified Substitutions message responses, refer to Sections 3.2.1.3.2.7 and 3.2.1.3.2.14, respectively, for responses provided at the application level of interface data exchange. All other messages require no explicit response messages.

3.2.1.4 Quality of Service

Not applicable.

3.2.1.5 AP Error Handling

Errors are handled in different ways, depending on the type of CDM session. Each of the CDM session protocol schemes are detailed below. Refer to Appendix A for a complete list of the error codes and associated messages that are use by the various session protocols.

ADL Session Protocol

The AOCNET server (i.e., the TFMS) will consider any of the following events to be a "loss of client":

- Notification that the socket connection to the client has been lost
- Notification that a message to the client is undeliverable
- Excessive backup in the sending queue - The server will queue ADL files intended for a client in the event that the socket is not being read as fast as it is being written. A maximum queue of 50 ADL files will be allowed. Once the maximum is exceeded, the server will consider the client to be inaccessible and will terminate the session.
- Receipt of a disconnect message

When the AOCNET server detects any of these conditions, it closes the connection and removes the client from the registration tables.

An AOCNET Client will consider any of the following to be a "loss of server":

- Notification that the socket connection to the server has been lost
- Notification that a message to the server is undeliverable
- Receipt of a shutdown message

When an AOCNET Participant client detects a 'loss of server', it closes the connection, notifies the user (as appropriate), and tries to re-establish the connection. In either case, when a connection is closed the session will be considered to be ended.

Flight Data and Simplified Substitution Session Protocols

The AOCNET server will consider any of the following events to be a "loss of client":

- Notification that the socket connection to the client has been lost
- Notification that a message to the client is undeliverable

When the AOCNET server detects any of these conditions, it closes the connection and removes the client from the registration tables.

An AOCNET Client will consider any of the following to be a "loss of server":

- Notification that the socket connection to the server has been lost
- Notification that a message to the server is undeliverable
- Receipt of a shutdown message

When an AOCNET Client detects a 'loss of server', it closes the connection, notifies the user (as appropriate), and tries to re-establish the connection. In either case, when a connection is closed the session will be considered to be ended.

CTOP Session Protocols

The AOCNET server considers any of the following events to be a "loss of client":

- Notification that the socket connection to the client has been lost
- Notification that a message to the client is undeliverable
- Heartbeat Request has not been received from the AOCNET client beyond the configured time period.

When the AOCNET server detects any of these conditions, it closes the connection and removes the client from the registration tables.

The AOCNET Client considers any of the following to be a "loss of server":

- Notification that the socket connection to the server has been lost
- Notification that a message to the server is undeliverable
- Heartbeat Reply has not been received from the AOCNET server beyond the configured time period
- Receipt of a shutdown message

When an AOCNET client detects a 'loss of server', it closes the connection, notifies the user (as appropriate), and tries to re-establish the connection. In either case, when a connection is closed the session will be considered to be ended.

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To prevent message loss, sequence numbers are optionally used to track that all flight data messages and replies are being received properly. The client optionally assigns a sequence to each message when it is sent. The server returns the sequence number on the reply for that message. The server tracks the sequence numbers and detects any out of sequence occurrences. Sequence errors are logged and examined periodically to assess the performance of the communications. No recovery processing for individual messages is implemented at this time.

Sequence numbers are optional for CTOP messages although they are highly recommended. Additionally, CTOP uses other mechanisms to detect and recover from missing data. These include the required TOS sequence number in the TOS message and the various Re-synch request/reply message pairs.

3.2.1.6 Interface Summary Table

An interface summary table (see Table 3-XLVI below) shows the association between the messages that flow across the interface and the APs of the interfacing subsystems. The left side of the interface summary table column lists the TFMS APs. The center columns contain the names of the messages transferred, the direction of message traffic flow, and the reference used to define the data, followed by the ICD Section containing the particular message or data breakout. The right hand column lists the AOCNET APs.

Table 3-XLVI. CDM Application Messages

Subsystem A TFMS AP	Messages	Data Flow	Reference	Subsystem B AOCNET Client AP
External Portal Message Interface Server	Aggregate Demand List	A → B	• Section 3.2.1.3.2.1 • ADL and Broadcast File Format Specification, Version 12.4, Part 1	AOCNET Client AP
External Portal Message Interface Server	FSM Broadcast Request	A ← B	• Section 3.2.1.3.2.2 • ADL and Broadcast File Format Specification, Version 12.4, Part 2	AOCNET Client AP

Subsystem A TFMS AP	Messages	Data Flow	Reference	Subsystem B AOCNET Client AP
External Portal Message Interface Server	FSM Broadcast Reply	A → B	• Section 3.2.1.3.2.3 • ADL and Broadcast File Format Specification, Version 12.4, Part 2	AOCNET Client AP
External Portal Message Interface Server	FSM Broadcast Message	A → B	• Section 3.2.1.3.2.4 • ADL and Broadcast File Format Specification, Version 12.4, Part 2	AOCNET Client AP
External Portal Message Interface Server	Meteorological Aviation Reports	A → B	• Section 3.2.1.3.2.5 • FCM-H1-2005 Section 12	AOCNET Client AP
External Portal Message Interface Server	Terminal Aerodrome Forecasts	A → B	• Section 3.2.1.3.2.6 • WSOM, D-31 Section 7	AOCNET Client AP
External Portal Message Interface Server	Flight Create Messages	A ← B	• Section 3.2.1.3.2.7.1	AOCNET Client AP
External Portal Message Interface Server	Flight Modify Messages	A ← B	• Section 3.2.1.3.2.7.2 • TFMS ICD for Substitution, Section 4.2.2	AOCNET Client AP
External Portal Message Interface Server	Flight Cancel Messages	A ← B	• Section 3.2.1.3.2.7.3 • TFMS ICD for Substitution, Section 4.2.3	AOCNET Client AP
External Portal Message Interface Server	Early Intent Messages	A ← B	• Section 3.2.1.3.2.8 • Protocol for Submission of Early Intent Messages to ETMS Ver 1.3, Section 2.3	AOCNET Client AP

Subsystem A TFMS AP	Messages	Data Flow	Reference	Subsystem B AOCNET Client AP
External Portal Message Interface Server	Flight Data Message Good Response	A → B	• Section 3.2.1.3.2.7.4a • TFMS ICD for Substitution, Section 4.3.1	AOCNET Client AP
External Portal Message Interface Server	Flight Data Message Error Response	A → B	• Section 3.2.1.3.2.7.4b • TFMS ICD for Substitution, Section 4.3.2	AOCNET Client AP
External Portal Message Interface Server	Slot Credit Substitution Messages	A ← B	• Section 3.2.1.3.2.10 • TFMS ICD for Substitution, Section 4.2.4	AOCNET Client AP
External Portal Message Interface Server	Slot Create Messages	A ← B	• Section 3.2.1.3.2.11 • TFMS ICD for Substitution, Section 4.2.5	AOCNET Client AP
External Portal Message Interface Server	Hold All Slots Messages	A ← B	• Section 3.2.1.3.2.12 • TFMS ICD for Substitution, Section 4.2.6	AOCNET Client AP
External Portal Message Interface Server	Release All Slots Messages	A ← B	• Section 3.2.1.3.2.13 • TFMS ICD for Substitution, Section 4.2.7	AOCNET Client AP
External Portal Message Interface Server	Substitution Message Good Responses	A → B	• Section 3.2.1.3.2.14 • TFMS ICD for Substitution, Section 4.3.1	AOCNET Client AP
External Portal Message Interface Server	Substitution Message Error Responses	A → B	• Section 3.2.1.3.2.14 • TFMS ICD for Substitution, Section 4.3.2	AOCNET Client AP
External Portal Message Interface Server	Report Requests	A ← B	• Section 3.2.1.3.2.15 • TFMS ICD for Substitution, Section 6.1	AOCNET Client AP

Subsystem A TFMS AP	Messages	Data Flow	Reference	Subsystem B AOCNET Client AP
External Portal Message Interface Server	Estimated Departure Clearance Time List	A → B	• Section 3.2.1.3.2.16 • TFMS ICD for Substitution, Section 6.2.1	AOCNET Client AP
External Portal Message Interface Server	Estimated Departure Clearance Substitution Status	A → B	• Section 3.2.1.3.2.17 • TFMS ICD for Substitution, Section 6.2.2	AOCNET Client AP
External Portal Message Interface Server	Estimated Departure Clearance Time Slot List	A → B	• Section 3.2.1.3.2.18 • TFMS ICD for Substitution, Section 6.2.3	AOCNET Client AP
External Portal Message Interface Server	Estimated Departure Clearance Time Unassigned Slots List	A → B	• Section 3.2.1.3.2.19 • TFMS ICD for Substitution, Section 6.2	AOCNET Client AP
External Portal Message Interface Server	Bridging On Message	A ← B	• Section 3.2.1.3.2.20 • TFMS ICD for Substitution, Section 6.3	AOCNET Client AP
External Portal Message Interface Server	Bridging On Response	A → B	• Section 3.2.1.3.2.20 • TFMS ICD for Substitution, Section 6.3	AOCNET Client AP
External Portal Message Interface Server	Bridging Off Message	A → B	• Section 3.2.1.3.2.21 • TFMS ICD for Substitution, Section 6.3	AOCNET Client AP
External Portal Message Interface Server	Bridging Off Response	A → B	• Section 3.2.1.3.2.21 • TFMS ICD for Substitution, Section 6.3	AOCNET Client AP
External Portal Message Interface Server	Slot List Message	A → B	• Section 3.2.1.3.2.22.1 • TFMS ICD for Substitution, Section 3.1	AOCNET Client AP

Subsystem A TFMS AP	Messages	Data Flow	Reference	Subsystem B AOCNET Client AP
External Portal Message Interface Server	Substitution Status Message*	A → B	• Section 3.2.1.3.2.22.2 • TFMS ICD for Substitution, Section 7.1	AOCNET Client AP
External Portal Message Interface Server	GDP Termination Message*	A → B	• Section 3.2.1.3.2.22.3 • TFMS ICD for Substitution, Section 7.2	AOCNET Client AP
External Portal Message Interface Server	EDCT Update*	A → B	• Section 3.2.1.3.2.22.4 • TFMS ICD for Substitution, Section 7.3	AOCNET Client AP
External Portal Message Interface Server	DAS Delay Message*	A → B	• Section 3.2.1.3.2.22.5 • TFMS ICD for Substitution, Section 7.4	AOCNET Client AP
External Portal Message Interface Server	GAAP Slot Assignment Message*	A → B	• Section 3.2.1.3.2.22.6 • TFMS ICD for Substitution, Section 7.5	AOCNET Client AP
External Portal Message Interface Server	SCS Bridging Update Message*	A → B	• Section 3.2.1.3.2.22.7 • TFMS ICD for Substitution, Section 7.6	AOCNET Client AP
External Portal Message Interface Server	UDP Bridging Update Message*	A → B	• Section 3.2.1.3.2.22.8 • TFMS ICD for Substitution, Section 7.19	AOCNET Client AP
External Portal Message Interface Server	ECR Update Message*	A → B	• Section 3.2.1.3.2.22.9 • TFMS ICD for Substitution, Section 7.7	AOCNET Client AP
External Portal Message Interface Server	SCS Status Message*	A → B	• Section 3.2.1.3.2.22.10 • TFMS ICD for Substitution, Section 7.8	AOCNET Client AP

Subsystem A TFMS AP	Messages	Data Flow	Reference	Subsystem B AOCNET Client AP
External Portal Message Interface Server	Dropout Flight Message*	A → B	• Section 3.2.1.3.2.22.11 • TFMS ICD for Substitution, Section 7.9	AOCNET Client AP
External Portal Message Interface Server	Recontrol Message*	A → B	• Section 3.2.1.3.2.22.12 • TFMS ICD for Substitution, Section 7.10	AOCNET Client AP
External Portal Message Interface Server	Substitution Message*	A → B	• Section 3.2.1.3.2.22.13 • TFMS ICD for Substitution, Section 7.11	AOCNET Client AP
External Portal Message Interface Server	Timeout Cancelled Flight Message*	A → B	• Section 3.2.1.3.2.22.14 • TFMS ICD for Substitution, Section 7.13	AOCNET Client AP
External Portal Message Interface Server	Reinstated Flight Message*	A → B	• Section 3.2.1.3.2.22.15 • TFMS ICD for Substitution, Section 7.14	AOCNET Client AP
External Portal Message Interface Server	Flight ID Change Message*	A → B	• Section 3.2.1.3.2.22.16 • TFMS ICD for Substitution, Section 7.15	AOCNET Client AP
External Portal Message Interface Server	Diversion Cancel Message*	A → B	• Section 3.2.1.3.2.22.17 • TFMS ICD for Substitution, Section 7.16	AOCNET Client AP
External Portal Message Interface Server	Diversion Recovery Message*	A → B	• Section 3.2.1.3.2.22.18 • TFMS ICD for Substitution, Section 7.16	AOCNET Client AP
External Portal Message Interface Server	Adaptive Compression Update Message*	A → B	• Section 3.2.1.3.2.22.19 • TFMS ICD for Substitution, Section 7.17	AOCNET Client AP

Subsystem A TFMS AP	Messages	Data Flow	Reference	Subsystem B AOCNET Client AP
External Portal Message Interface Server	Scope Reduction Message*	A → B	• Section 3.2.1.3.2.22.20 • TFMS ICD for Substitution, Section 7.18	AOCNET Client AP
External Portal Message Interface Server	EDCT Adaptive Compression On Message*	A → B	• Section 3.2.1.3.2.22.21 • TFMS ICD for Substitution, Section 7.20	AOCNET Client AP
External Portal Message Interface Server	EDCT Adaptive Compression Off Message*	A → B	• Section 3.2.1.3.2.22.22 • TFMS ICD for Substitution, Section 7.21	AOCNET Client AP
External Portal Message Interface Server	Bridging On Response Message*	A → B	• Section 3.2.1.3.2.22.23	AOCNET Client AP
External Portal Message Interface Server	Bridging Off Response Message*	A → B	• Section 3.2.1.3.2.22.24	AOCNET Client AP
External Portal Message Interface Server	CTOP FCA*	A → B	Appendix D.4.2 Appendix D.5.3.2	AOCNET Client AP
External Portal Message Interface Server	CTOP FCA List Request	A ← B	Appendix D.4.2 Appendix D.5.3.2	AOCNET Client AP
External Portal Message Interface Server	CTOP FCA List Reply	A → B	Appendix D.4.2 Appendix D.5.3.2	AOCNET Client AP
External Portal Message Interface Server	CTOP FCA Re-Synch Request	A ← B	Appendix D.4.2 Appendix D.5.3.2	AOCNET Client AP
External Portal Message Interface Server	CTOP FCA Re-Synch Reply	A → B	Appendix D.4.2 Appendix D.5.3.2	AOCNET Client AP
External Portal Message Interface Server	CTOP FCA Flight List Request	A ← B	Appendix D.4.2 Appendix D.5.3.2	AOCNET Client AP
External Portal Message Interface Server	CTOP FCA Flight List Reply	A → B	Appendix D.4.2 Appendix D.5.3.2	AOCNET Client AP
External Portal Message Interface Server	CTOP FCA Request Error	A → B	Appendix D.4.2 Appendix D.5.3.2	AOCNET Client AP

Subsystem A TFMS AP	Messages	Data Flow	Reference	Subsystem B AOCNET Client AP
External Portal Message Interface Server	CTOP FCA Delete*	A → B	Appendix D.4.2 Appendix D.5.3.2	AOCNET Client AP
External Portal Message Interface Server	CTOP TOS Message	A ← B	Appendix D.4.3 Appendix D.5.3.3	AOCNET Client AP
External Portal Message Interface Server	CTOP TOS Reply	A → B	Appendix D.4.3 Appendix D.5.3.3	AOCNET Client AP
External Portal Message Interface Server	CTOP TOS Error	A → B	Appendix D.4.3 Appendix D.5.3.3	AOCNET Client AP
External Portal Message Interface Server	CTOP TOS Re-Synch Request	A ← B	Appendix D.4.3 Appendix D.5.3.3	AOCNET Client AP
External Portal Message Interface Server	CTOP TOS Re-Synch Reply	A → B	Appendix D.4.3 Appendix D.5.3.3	AOCNET Client AP
External Portal Message Interface Server	CTOP TOS Re-Synch Error	A → B	Appendix D.4.3 Appendix D.5.3.3	AOCNET Client AP
External Portal Message Interface Server	CTOP TMI*	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Trajectory Assignment*	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Pop-up*	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Drop-out*	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP List Request	A ← B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP List Reply	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Re-Synch Request	A ← B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Re-Synch Reply	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP

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Subsystem A TFMS AP	Messages	Data Flow	Reference	Subsystem B AOCNET Client AP
External Portal Message Interface Server	CTOP Re-Synch Error	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Trajectory Assignment Re-Synch Request	A ← B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Trajectory Assignment Re-Synch Reply	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Trajectory Assignment Re-Synch Error	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Cancel*	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Flight Plan Amendment*	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Suspend*	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Resume*	A → B	Appendix D.4.4 Appendix D.5.3.4	AOCNET Client AP
External Portal Message Interface Server	CTOP Substitution Message	A ← B	Appendix D.4.5 Appendix D.5.3.5	AOCNET Client AP
External Portal Message Interface Server	CTOP Substitution Reply	A → B	Appendix D.4.5 Appendix D.5.3.5	AOCNET Client AP
External Portal Message Interface Server	CTOP Substitution Error	A → B	Appendix D.4.5 Appendix D.5.3.5	AOCNET Client AP

*These messages are sent as unsolicited messages.

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3.2.2   Protocol Implementation

The TFMS-to-AOCNET interface communications functions are implemented according to OSI reference model as defined in FAA-STD-039b, Open Systems Architecture and Protocols, and FAA-STD-043b, Open System Interconnect Priority. Subsection 3.2.2 documents the OSI protocols implemented for each layer of the interface. For the layers not used, this following text will be used "This layer is not implemented within the TFMS-to-AOCNET interface".

1. Application Layer (Layer 7) – This layer is not implemented within the TFMS-to-AOCNET interface.

2. Presentation Layer (Layer 6) – This layer is not implemented within the TFMS-to-AOCNET interface.

3. Session Layer (Layer 5) – This layer is not implemented within the TFMS-to-AOCNET interface.

4. Transport Layer (Layer 4) - The TFMS-to-AOCNET interface uses the TCP, in accordance with RFC793, Transmission Control Protocol as its Transport layer protocol.

5. Network (Packet) Layer (Layer 3) - The TFMS-to-AOCNET interface uses the standard IP RFC791, Internet Protocol as its Network layer protocol.

6. Data-Link (Frame) Layer (Layer 2) – The TFMS-to-AOCNET uses the 100-baseT Ethernet standard in accordance with IEEE 802.3, IEEE Standard for Information Technology — Telecommunications and Information Exchange Between Systems, 2000 as the Data Link Layer

7. Physical Layer (Layer 1) – The Physical layer of the TFMS-to-AOCNET interface uses a standard Category 5 (Cat-5) Ethernet cable as its Physical layer protocol.

Figure 3-4, OSI Layer Functional Interface Connectivity Diagram for TFMS-to-AOCNET, gives a visual representation of the OSI layers and their structure. Solid lines represent connectivity via applications and/or physical connections whereas the dotted lines represent protocols and standards employed at both TFMS and AOCNET client applications.

OSI Layer Functional Interface Connectivity Diagram for TFMSto-AOCNET
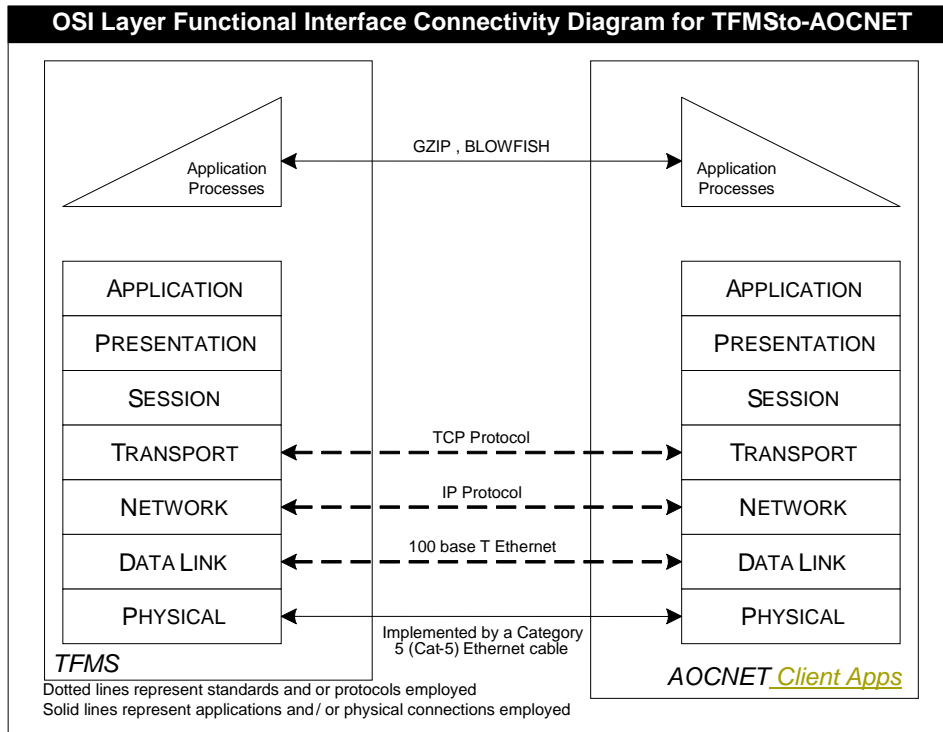
Figure 3-4. OSI Layer Functional Interface Connectivity Diagram for TFMS-to-AOCNET

3.2.2.1 Application Services

This section details the application and connectivity of the AOCNET interface. TFMS-to-AOCNET interface uses CDM Session protocols and a number of other sub-protocols to initiate and a session with the clients and exchange data. These protocols are defined in detail in Appendix C.

3.2.2.2 Network Services

The TFMS-to-AOCNET interface uses the established standards of HTTP in accordance with ISO/IEC 15445:2000 (E) Information Technology — Document Description and Processing Languages - HyperText Markup Language (HTML), and RFC 2616, Hypertext Transfer Protocol -- HTTP/1.1, Transmission Control Protocol (TCP) in accordance with RFC 793, Transmission Control Protocol, and Internet Protocol (IP) in accordance with RFC 791, Internet Protocol.

3.2.2.3 Naming and Addressing

Naming conventions are used for the exchange of ADL and FSM Broadcast files. These conventions are described in Appendix B, ADL & Broadcast File Format Specifications. AOCNET addressing conventions are described below.

General CDM Session Addressing Conventions

CDM data is exchanged between the TFMS and AOCNET clients via dedicated IP network communications services provided to CDM Participants: either AOCNET or VPN over INTERNET. In all cases the IP addresses employed for communications are pre-authorized by the FAA and approved for the TFMS-to-AOCNET interface.

3.2.3 Security

TFMS implements FAA information security guidelines in accordance with the Information Systems Security Plan (ISSP) for Traffic Flow Management–Modernization (TFM-M), the FAA Information Systems Security Program, FAA Order 1370.82A, and FAA-STD-045, OSI Security Architecture, Protocols and Mechanisms. It will enact security strategies and measures on all incoming information into TFMS.

3.2.4 Interface Design Characteristics Table

Subsection 3.2.4 summarizes the interface functional design characteristics in an interface design characteristics table or matrix in addition to the text. The Interface Design Characteristics Table 3-XLVII serves as a "quick-look" reference.

Table 3-XLVII. Interface Design Characteristics - CDM Application Messages

Message Name	Format	Size Min/Max Bytes	Time Constraints	Frequency
Aggregate Demand List	ASCII	1,744/ unconstrained **		Nominally every 5 minutes
FSM Broadcast Request	ASCII	24		As required
FSM Broadcast Reply	ASCII	130/1455*		In response to request
FSM Broadcast Message	ASCII	130/1455*		Nominally every 5 minutes
Meteorological Aviation Report	ASCII	65 / 640*		As required
Terminal Aerodrome Forecast	ASCII	78/ 1252*		As required
Flight Create Message	ASCII	38/114		As required
Flight Modify Message	ASCII	18/132		As required
Flight Cancel Message	ASCII	18/26		As required
Early Intent Message	ASCII	69/649		As required

Message Name	Format	Size Min/Max Bytes	Time Constraints	Frequency
Flight Data Message Good Response	ASCII	58/59	After receiving Flight Data message	In response to FD packet
Flight Data Message Error Response	ASCII	128/224*	After receiving Flight Data message	In response to FD packet
Slot Credit Substitution Messages	ASCII	40/46		As required
Slot Create	ASCII	40/46		As required
Hold All Slots	ASCII	22/23		As required
Release All Slots	ASCII	25/26		As required
Substitution Message Good Response	ASCII	198*	After receiving Sub message	In response to SS Packet
Substitution Message Error Response	ASCII	97/162*	After receiving Sub message	In response to SS Packet
Report Requests	ASCII	60/113		As required
Estimated Departure Clearance Time List	ASCII	689/760*		As required
Estimated Departure Clearance Substitution Status	ASCII	658/727*		As required
Estimated Departure Clearance Time Slot List	ASCII	134/137*		As required
Estimated Departure Clearance Time Unassigned Slots List	ASCII	37/97*		As required
Bridging On Message	ASCII	22/23		As required
Bridging On Response Message	ASCII	34/35	After receiving Bridging On message	As required
Bridging Off Message	ASCII	23/24		As required
Bridging Off Response Message	ASCII	35/36	After receiving Bridging Off message	As required
Slot List*	ASCII	153/156†		As required
Substitution Status*	ASCII	16/21		As required
GDP Termination*	ASCII	146/149†		As required
EDCT Update*	ASCII	152/155†		As required
DAS Delay*	ASCII	150/154†		As required
GAAP Slot Assignment*	ASCII	150/154†		As required
SCS Bridging Update*	ASCII	160/164†		As required
UDP Bridging Update*	ASCII	160/164†		As required

Message Name	Format	Size Min/Max Bytes	Time Constraints	Frequency
ECR Update*	ASCII	160/164†		As required
SCS Status*	ASCII	15/22		As required
Drop-out Flight*	ASCII	155/159†		As required
Re-control*	ASCII	150/153†		As required
Substitutions*	ASCII	153/156†		As required
Hold/Release Slots*	ASCII	155/158†		As required
Timeout Cancelled Flights*	ASCII	158/161†		As required
Reinstated Flight*	ASCII	175/182†		As required
Flight ID Change*	ASCII	157/160†		As required
Diverted Flights/Diversion Recoveries*	ASCII	159/162†		As required
Adaptive Compression Update*	ASCII	161/164†		As required
Scope Reduction*	ASCII	156/159†		As required
EDCT Adaptive Compression On	ASCII	14/17		As required
EDCT Adaptive Compression Off	ASCII	15/18		As required
CTOP FCA	Binary + ASCII-XML	24+ Variable		When a CTOP that includes the FCA is first proposed or issued, or when an FCA that is already included in a proposed or issued CTOP is modified."
CTOP FCA List Request	Binary + ASCII-XML	24+ Variable		At the discretion of an AOCNET client
CTOP FCA List Reply	Binary + ASCII-XML	24+ Variable	After receiving CTOP FCA List Request	In response to the CTOP FCA List Request
CTOP FCA Re-Synch Request	Binary + ASCII-XML	24+ Variable		At the discretion of an AOCNET client

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Message Name	Format	Size Min/Max Bytes	Time Constraints	Frequency	
CTOP FCA Re-Synch Reply	Binary + ASCII-XML	24+ Variable	After receiving CTOP FCA Re-Synch Request	In response to a CTOP FCA Re-Synch Request	**Deleted:** 24 *
CTOP FCA Flight List Request	Binary + ASCII-XML	24+ Variable		At the discretion of an AOCNET client	**Deleted:** 24 *
CTOP FCA Flight List Reply	Binary + ASCII-XML	24+ Variable	After receiving CTOP FCA Flight List Request	In response to a CTOP FCA Flight List Request	**Deleted:** 2 / **Deleted:** 4 *
CTOP FCA Request Error	Binary + ASCII-XML	24+ Variable		In response to an invalid CTOP FCA Flight List Request or CTOP FCA Re-Synch Request Message.	**Deleted:** 24 **
CTOP FCA Delete	Binary + ASCII-XML	24+ Variable		When an active CTOP containing the FCA is canceled or active or proposed CTOP is re-issued after the FCA has been removed from the CTOP	**Deleted:** 24 *
CTOP TOS Message	Binary + ASCII-XML	24+ Variable		At the discretion of an AOCNET client	**Deleted:** 24 *
CTOP TOS Reply	Binary + ASCII-XML	24+ Variable	After receiving CTOP TOS Message	In response to a valid CTOP TOS Message	**Deleted:** 24 *

Message Name	Format	Size Min/Max Bytes	Time Constraints	Frequency
CTOP TOS Error	Binary + ASCII-XML	24+ Variable		In response to an invalid or partially invalid CTOP TOS Message
CTOP TOS Re-Synch Request	Binary + ASCII-XML	24+ Variable		At the discretion of an AOCNET client
CTOP TOS Re-Synch Reply	Binary + ASCII-XML	24+ Variable	After receiving CTOP Re-synch Request	In response to a valid CTOP Re-synch Request
CTOP TOS Re-Synch Error	Binary + ASCII-XML	24+ Variable		In response to an invalid CTOP Re-synch Request
CTOP TMI	Binary + ASCII-XML	24+ Variable		When a CTOP TMI is proposed or issued, or when an active or proposed CTOP TMI is modified
CTOP Trajectory Assignment	Binary + ASCII-XML	24+ Variable		When a new trajectory assignment is made by TFMS when a CTOP TMI is active
CTOP Pop-up	Binary + ASCII-XML	24+ Variable		When a flight becomes known to a CTOP TMI after that TMI becomes active

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Message Name	Format	Size Min/Max Bytes	Time Constraints	Frequency
CTOP Drop-out	Binary + ASCII-XML	24+ Variable		When a flight that was previously in a CTOP TMI no longer has a TOS option that demands any FCA in the active CTOP TMI
CTOP List Request	Binary + ASCII-XML	24+ Variable		At the discretion of an AOCNET client
CTOP List Reply	Binary + ASCII-XML	24+ Variable	After receiving CTOP TMI List Request	In response to the CTOP TMI List Request
CTOP Re-Synch Request	Binary + ASCII-XML	24+ Variable		At the discretion of an AOCNET client
CTOP Re-Synch Reply	Binary + ASCII-XML	24+ Variable	After receiving CTOP TMI Re-Synch Request	In response to a valid CTOP TMI Re-Synch Request
CTOP Re-Synch Error	Binary + ASCII-XML	24+ Variable		In response to an invalid CTOP TMI Re-Synch Request
CTOP Trajectory Assignment Re-Synch Request	Binary + ASCII-XML	24+ Variable		At the discretion of an AOCNET client
CTOP Trajectory Assignment Re-Synch Reply	Binary + ASCII-XML	24+ Variable	After receiving CTOP Trajectory Assignment Re-Synch Request	In response to a valid CTOP Trajectory Assignment Re-Synch Request

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Message Name	Format	Size Min/Max Bytes	Time Constraints	Frequency
CTOP Trajectory Assignment Re-Synch Error	Binary + ASCII-XML	24+ Variable		In response to an invalid CTOP Trajectory Assignment Re-Synch Request
CTOP Cancel	Binary + ASCII-XML	24+ Variable		When an active CTOP TMI has been cancelled by a traffic manager
CTOP Flight Plan Amendment	Binary + ASCII-XML	24+ Variable		When TFMS successfully sends an amendment to ERAM for a flight in an active CTOP
CTOP Suspend	Binary + ASCII-XML	24+ Variable		When CTOP message processing is suspended
CTOP Resume	Binary + ASCII-XML	24+ Variable		When CTOP message processing is resumed
CTOP Substitution Message	Binary + ASCII-XML	24+ Variable		At the discretion of an AOCNET client
CTOP Substitution Reply	Binary + ASCII-XML	24+ Variable	After receiving CTOP Substitution Message.	In response to a valid CTOP Substitution Message.
CTOP Substitution Error	Binary + ASCII-XML	24+ Variable		In response to an invalid CTOP Substitution Message.

*Note – Some entries in these messages may require more than one line of entry. The given maximum size is valid if all entries do not exceed one line.

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Message Name	Format	Size Min/Max Bytes	Time Constraints	Frequency
** ADL file lengths are unconstrained; however they can be quite large. For example uncompressed Atlanta (ATL) and O'Hare (ORD) ADLs are routinely multiple megabytes in size. †Note – These messages include a Slot List. The min/max sizes provided are for a slot list containing a single flight.				

Deleted: **Note – These messages are not actual application messages, but instead are acknowledgements/error (provided in an FD packet, or SS packet or a CTOP message) response to received application messages.¶

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Because of the large number of session messages, they are presented here in a separate table, Table 3-XLVIII for clarity. All messages are in a combination of binary and ASCII format so the Format column has been removed in this instance.

Table 3-XLVIII. Interface Design Characteristics - CDM Session Protocol Messages

Message Name*	Size (Bytes)*	Time Constraints	Frequency
• M_ATMS_CONNECT	24	To start session	Initial Connection / Reconnection
• M_ATMS_ACCEPT	24	After Initial Connection	Response to M_ATMS_CONNECT
• M_ATMS_REJECT	24	After Initial Connection	Response to M_ATMS_CONNECT
• M_DISCONNECT	24	To shut down session	When shutting down (client side)
• M_SHUTDOWN	24	To shut down session	When shutting down (server side)
• M_HB_REQ	24	None	As required
• M_HB_ACK	24	After request	In response to M_HB_REQ
• M_FLIGHT_DATA_PACKET	24*	None	As required
• M_FLIGHT_DATA_REPLY	24*	After request	In response to M_FLIGHT_DATA_PACKET or M_SS_DATA_PACKET
• M_SLOT_DATA	24*	None	As Required

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Message Name*	Size (Bytes)*	Time Constraints	Frequency
• M_GDP_REQ	24*	None	As Required
• M_GDP_REPLY	24*	None	In response to M_GDP_REQ
• M_GDP_MESSAGE	24*	None	As Required
• M_EI_FLIGHT_DATA_PACKET	24*	None	As Required
• M_SS_DATA_PACKET	24*	None	As Required
• M_REGISTER	24*	None	As Required
• M_REGISTER_ACK	27/28	After request	In response to M_REGISTER
• M_UN_REGISTER	27/28	After registering	When deregistering (client side)
• M_UN_REGISTER_ACK	27/28	After request	In response to M_UN_REGISTER
• M_START_ADL	24*	None	As Required
• M_ADL_DATA	24*	After Start message	In sequence after M_START_ADL
• M_END_ADL	24*	As final ADL data message	In sequence after M_ADL_DATA
• M_ELEMENT_DELETED	24*	None	As Required
• M_EDCT_COMMAND	24*	None	As Required
• M_EDCT_REPLY	24*	After request	In response to M_EDCT_COMMAND
• M_REQ_COMMAND	24*	None	As Required
• M_REQ_REPLY	24*	After request	In response to M_REQ_COMMAND
• M_ADL_DATA_ACK	24	After transmission of ADL data	After M_END_ADL

Message Name*	Size (Bytes)*	Time Constraints	Frequency
• M_ ADD_ADL_AAR	24*	None	As Required
• M_ ADD_ADL_ADR	24*	None	As Required
• M_ ADD_ADL_AAR_GDP	24*	None	As Required
• M_ ADD_ADL_GDP_PARAM	24*	None	As Required
• M_ ADD_ADL_COMP_PARAM	24*	None	As Required
• M_ ADD_ADL_BLANK_PARAM	24*	None	As Required
• M_ ADD_ADL_GS_PARAM	24*	None	As Required
• M_ DEL_ADL_AAR	27/28	None	As Required
• M_ DEL_ADL_ADR	27/28	None	As Required
• M_ DEL_ADL_AAR_GDP	27/28	None	As Required
• M_ DEL_ADL_GDP_PARAM	27/28	None	As Required
• M_ DEL_ADL_COMP_PARAM	27/28	None	As Required
• M_ DEL_ADL_BLANK_PARAM	27/28	None	As Required
• M_ DEL_ADL_GS_PARAM	27/28	None	As Required
• M_UPDATE_ADL_REQ	27/28	None	As Required

Message Name*	Size (Bytes)*	Time Constraints	Frequency
• M_ WEATHER_COMMAND	27/28	None	As Required
• M_ WEATHER_REPLY	24*	After request	In response to M_WEATHER_ COMMAND
• M_AUTO_MONITOR_REQ	24	None	As Required
• M_AUTO_MONITOR_REPLY	24*	None	In response to M_AUTO_MONITOR_REQ
• M_AUTO_MONITOR_MESSAGE	24*	None	As Required
• M_ADD_ADL_AFP_PARAM	24*	None	As Required
• M_DEL_ADL_AFP_PARAM	27/28	None	As Required
• M_CTOP_CONNECTION_REQUEST	24		Sent only once by a AOCNET client after socket connection is made
• M_CTOP_CONNECTION_ACCEPTED	24		In response to a Connection Request if the connection is authorized
• M_CTOP_CONNECTION_REJECTED	24		In response to a Connection request if the connection is not authorized
• M_CTOP_HEARTBEAT_REQUEST	24		AOCNET client configured frequency
• M_CTOP_HEARTBEAT_REPLY	24		In response to a Heartbeat Request

Message Name*	Size (Bytes)*	Time Constraints	Frequency
• M_CTOP_SHUTDOWN	24		In the event TFMS shuts down the connection
*Note – These messages will also have a payload (e.g., one or more application messages) in its data buffer, which are not accounted for in the sizes. The data payloads may be from 0 to 128 Kb of data. Refer to the individual messages in Appendix C for these sizes.			

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3.3 Physical Design Characteristics

The TFMS-to-AOCNET interface uses two separate methods of interfacing (Figure 3-5 below shows the physical characteristics of the interface):

- Via the AOCNET WAN - The AOCNET/CDM participants using the AOCNET WAN connect to the FTI-NESG. On the TPC side of the interface, the FTI-NESG connects to ports on the two Cisco Catalyst 3560G switches (designated SWPT_4). The data flows through the Cisco 7206 Router/Switch (designated EXTRTR). The physical demarcation point is at the TPC's SWPT_4 switches.

- VPN/INTERNET via FAA FTI NESG gateway connection - The AOCNET/CDM participants using the VPN/INTERNET, connect to the FTI-NESG. On the TPC side of the interface, the connectivity follows the same path into the TFMS subsystems as described in the AOCNET WAN connectivity above.

TFMS-to-AOCNet Interface Physical Diagram
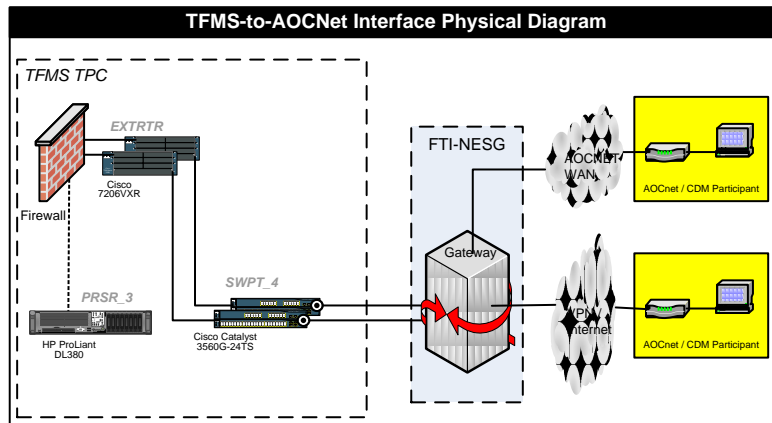
Figure 3-5. TFMS-to-AOCNET Interface Physical Diagram

3.3.1 Electrical Power and Electronic Characteristics

Not applicable. There is no specific electrical power and electronic characteristics applicable to the TFMS-to-AOCNET interface. No subsystems supply electrical, mechanical, or environmental support to another subsystem. Systems supply their own discrete power and do not support each other in this manner.

3.3.1.1 Connectors

The TMFS-to-AOCNET interface used by AOCNET WAN employs a standard RS-232 connector as the interface connection. Standard RS-232 pin assignments are used in this case.

The TFMS-to-AOCNET interface used by the VPN/INTERNET employs a standard RJ-45 Ethernet connection connector as the interface connection in all instances. Standard RJ-45 pin assignments are used in this case.

3.3.1.2 Wire/Cable

Standard RS-232 communication cable is used for the AOCNET WAN interface instances.

Standard Cat5 Ethernet cabling with RJ-45 connectors are used for the VPN/INTERNET interface instances.

3.3.1.3 Electrical Power/Grounding

Not applicable.

3.3.1.4 Fasteners

Not applicable.

3.3.1.5 Electromagnetic Compatibility

Not applicable.

4 Verification Provisions

4.1 Responsibility for Verification

Following are verification provisions for the TFMS-to-AOCNET interface:

1. Pre-OT&E (Operational Testing and Evaluation)

2. OT&E

3. KSAT (Key Site Acceptance Test)

4.1.1 Pre-OT&E

Pre-Operational Test and Evaluation (OT&E) testing is performed to verify the operational viability of the TFMS-AOCNET interface and data stream prior to formal testing. AOCNET message exchange is available within this test phase but testing may be performed using simulated data. Pre-OT&E testing verifies that the end systems comply with and utilize the messages and formats as specified in this ICD. This test is conducted by both end systems as part of their informal system tests using their own test plans and test procedures. It is conducted at their respective test facilities. The William J Hughes Technical Center (WJHTC) TFMS Test Facility (TF) is designated as the test facility for the TFMS system. Pre-OT&E testing of TFMS is performed in accordance with FAA-approved test plans and procedures. TFMS test results are provided to the FAA. A TPC Auxiliary Platform (TAP) at the WJHTC is configured with the appropriate TFMS release software to support AOCNET testing (refer to Section 4.2 Test Environments).

4.1.2 OT&E

The OT&E tests are live tests conducted formally by the FAA with CSC support at the TPC. They include the Air Traffic Control System Command Center (ATCSCC) "early look" tests with the participation of FAA field personnel. Among other things, these tests verify end to end connectivity between TFMS and the AOCNET.

4.1.3 KSAT

The Key Site Acceptance Test (KSAT) focuses on TFMS functionality and connectivity tests. It is conducted under operational conditions, performed with live data between the TPC, the ATCSCC and an FAA-selected Air Route Traffic Control Center (ARTCC) site.

4.2 Test Environments

The TFMS-AOCNET test environment consists of a TPC Auxiliary Platform (TAP) that is configured with the AOCNET software for CDM user community pre-production testing. Each TAP is a separate test environment, loaded with either the current operational TFMS release or the next version to be released. Each TAP is isolated from the operational system and is configured to receive one way flow of live flight data from a message forwarding component of the TFMS operational system. Non-operational data on a TAP is not enabled to flow into the operational system.

Access to the test environments for CDM customers requires that a separate connection be created to access the TAPs. Current operational CDM network connections (Ops) are not permitted to access the test environments. A separate non-operational service delivery point or gateway (referred to as the FAA National Test Bed or FNTB) provides isolation from the operational system and access to the TFMS test environments.

4.3 Special Verification Requirements

No special verification requirements exist for this ICD.

4.4 Verification Requirements Traceability Matrix (VRTM)

No VRTM is required for this ICD.

5 Preparation for Delivery

There are no specific preparations for delivery applicable to the TFMS-to-AOCNET interface.

6   Notes

6.1   Definitions

None

6.2   Abbreviations and Acronyms

This section provides a definition of acronyms contained within this ICD.

A/N	Alphanumeric Character
ABRG	Adaptive Bridging
AAR	Aircraft Arrival Rate
AC	Adaptive Compression
ACID	Aircraft Identifier
ACK	Acknowledge
ADCUS	Advise Customs Flag
ADL	Aggregate Demand List
ADPT	Adaptive Compression
ADR	Aircraft Departure Rate
AFIX	Arrival Fix
AFP	Airspace Flow Program
ANSI	American National Standards Institute
AOCNET	Airline Operation Center Network
AP	Application Process
ARINC	Aeronautical Radio Incorporated
ARR	Arrival
ARTCC	Air Route Traffic Control Center
ASCII	American Standard Code for Information Interchange
ASDI	Aircraft Situation Display to Industry
ASLOT	Assigned Arrival Slot
ATC	Air Traffic Control
ATCSCC	Air Traffic Control System Command Center
ATO	Air Traffic Operations
BLKT	Blanket Program
CDM	Collaborative Decision Making
CDRL	Contract Data Requirements List for TFM-M
COMP	Compression
CONUS	Continental United States
CT	Control Time
CTA	Controlled Time of Arrival
CTD	Controlled Time of Departure
CTOP	Collaborative Trajectory Options Program
CX	Cancel Flag

DAS	Delay Assignment
DEP	Departure Airport
DEST	Destination Airport
DID	Data Item Description
DME	Distance Measuring Equipment
DOD	Department Of Defense
DTG	Date Time Group
DVRSN	Diversion
ECR	EDCT Change Request
EDCT	Estimated Departure Clearance Time
EETA	Earliest Estimated Time of Arrival
EENTRY	Earliest Entry Time (for AFP)
EI	Early Intent
ELEM	Element Definition
ERTA	Earliest Runway Time of Arrival
ERTD	Earliest Runway Time of Departure
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ETE	Estimated Time En-Route
ETMS	Enhanced Traffic Management System
EX	Exempt Flag
FA	Fuel Advisory
FAA	Federal Aviation Administration
FADT	Fuel Flow Advisory Delay Time
FBCM	FSM Broadcast Message
FC	Flight Create
FCA	Flow Constrained Area
FCM	Federal Meteorological Handbook
FD	Flight Data Packet
FDB	TFMS Flight Database
FEA	Flow Evaluation Area
FM	Flight Modify
FM	FROM Weather Change Group
FP	Flight Plan
FSM	Flight Schedule Monitor
FT	Feet
FTI	Federal Telecommunication Infrastructure
FX	FX-message Cancelled Flag
GA	General Aviation
GAAP	General Aviation Airport Programs
GCD	Great Circle Distance
GDP	Ground Delay Program
GS	Ground Stop

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HAR	High Altitude Reservation
HB	Heartbeat
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
ID	Identification
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IGTD	Initial Gate Time of Departure
IP	Internet Protocol
IR	Interface Requirement
IRD	Interface Requirement Document
IRS	Interface Requirement Specification
ISO	International Organization for Standardization
ISSP	Information Systems Security Plan
KB	Kilobyte
KM	Kilometer
KSAT	Key Site Acceptance Test
LGTD	Airline Gate Time of Departure
LRTD	Airline Runway Time of Departure
METAR	Meteorological Aviation Report
MQ	Message Queue
NAS	National Airspace System
NESG	NAS Enterprise Security Gateway
NM	Nautical Mile
NOACK	No Acknowledgement
NRP	National Route Program Flag
OAG	Official Airline Guide
OOOI	Out-Off-On-In
ORIG	Origin Airport
OSI	Open Systems Interconnect
OT&E	Operational test and Evaluation
PARAMS	Parameters
PTP	High Altitude Point-to-Point
RBS	Ration By Schedule
RCTL	DAS Controlled Time
REQ	Request

REV	Revision
RFC	Request For Comments
RM	Remove Cancelled Flag
RS	Message Cancelled Flag (generated when an Authorized FAA User takes an OAG flight out of the database)
RVR	Runway Visual Range
RVRDF	Runway Visual Range Data Feed
RZ	NAS Cancelled Flag

SBRG	Slot Bridging
SC	Slot Create
SCS	Slot Credit Substitution
SH	Slot Hold Flag
SM	Statute Miles
SS	Simplified Substitution Packet
SSS	System/Subsystem Specification
STD	Standard
SUB	Airline Substitution
SWAP	Severe Weather Avoidance Program

TAF	Terminal Aerodrome Forecast
TAP	TFMS Production Center (TPC) Auxiliary Platform
TBD	To Be Determined
TCAS	Traffic Alert/Collision Avoidance System
TCP	Transmission Control Protocol
TFM	Traffic Flow Management
TFMDI	Traffic Flow Management Data to Industry
TFMI	Traffic Flow Management Infrastructure
TFM-M	Traffic Flow Management - Modernization
TFMS	Traffic Flow Management System
TMI	Traffic Management Initiative
TOS	Trajectory Options Set
TPC	TFMS Production Center
TRS	TFMS Remote Site

UBRG	UDP Bridging
UDP	Unified Delay Program
UPD	Update
US	United States
UTC	Universal Time Coordinated
UX	Update Cancelled Flag

| VPN | Virtual Private Network |
| VRTM | Verification Requirements Traceability Matrix |

WAN	Wide Area Network
WJHTC	William J Hughes Technical Center
WMO	World Meteorological Organization
WSOM	Weather Services Operations Manual
WXRTE	Severe Weather Reroute
XML	EXtensible Markup Language

Appendix A Error Codes and Messages

Table A-I provides a list of the error codes and corresponding messages that may be generated by the TFMS in response to processing received CDM messages. The CDM error messages associated with the CTOP are listed in Appendix D, section B.

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Table A-I. Error Codes/Messages

Code	Error Message	Corrective Action
Packet Header Error Messages		
ERR401	PACKET NOT PROCESSED	The packet has not been processed due to internal TFMS error.
ERR402	PACKET ID IS MISSING. USE LLLDDDDDDDDDDD.DD	The packet header line does not include a packet ID.
ERR403	INVALID PACKET ID. USE LLLDDDDDDDDDDD.DD	The packet ID does not match the specified syntax.
ERR404	NO MESSAGES IN PACKET.	The packet contains no FC, FM, or FX messages.
ERR405	UNKNOWN PACKET CODE. USE FD OR SS	The packet contains a code other than FD or SS in the header line.
ERR406	PACKET CODE LINE MISSING. USE FD LLLDDDDDDDDDDD.DD	The packet has no header line.
ERR407	UNKNOWN HUB SITE ARINC ADDRESS. USE QU BOSCDYA	The packet was sent to the wrong address.
ERR408	PACKET NOT PROCESSED	An error occurred while attempting to update the TFMS Flight Database
ERR409	MESSAGE NOT PROCESSED DUE TO TFMS INTERNAL ERROR	An error occurred while attempting to update the TFMS Flight Database
ERR410	INVALID EN ROUTE TIME	En Route Time may not exceed 18 hours.
ERR411	MESSAGE NOT PROCESSED: FDB IN SLAVE MODE.	This message should **only** appear on internal TFMS logs.
FC, FM, FX Error Messages		
ERR301	UNKNOWN MESSAGE TYPE. USE FC/FM/FX/SM/HOLD ALL SLOTS FOR/RELEASE ALL SLOTS FOR	A message with an invalid message type was received. For FD packets, valid message types are FC, FM, and FX. For SS packets, valid message types are FM, FX, SC, HOLD ALL SLOTS, and RELEASE ALL SLOTS.
ERR302	UNKNOWN FORMAT FOR FLIGHT ID	The flight ID field does not match the specified syntax.
ERR303	UNKNOWN FORMAT FOR AIRPORT	An airport field does not match the specified syntax.
ERR304	UNKNOWN FORMAT FOR DEPARTURE AIRPORT.	The departure airport field does not match the specified syntax.

Code	Error Message	Corrective Action
ERR305	UNKNOWN FORMAT FOR ARRIVAL AIRPORT	The arrival airport field does not match the specified syntax.
ERR306	UNKNOWN AIRPORT	The specified airport does not exist in the TFMS airport database.
ERR307	FLIGHT ID/DEPARTURE/ARRIVAL AIRPORT MISSING.	One of the first three required fields is missing (cannot tell which one from syntax).
ERR308	UTC DEPARTURE DATE/TIME MISSING.	The required field UTC Departure Date/Time is missing.
ERR309	INVALID UTC DEPARTURE DATE/TIME.	The UTC Departure Date/Time contains an illegal value (e.g., a month greater than 12)
ERR310	UNKNOWN FORMAT FOR UTC DEPARTURE DATE/TIME	The UTC Departure Date/Time field does not match the specified syntax.
ERR311	AIRCRAFT TYPE MISSING.	An aircraft type field was not provided on an FC.
ERR312	RUNWAY DEPARTURE TIME MISSING	A runway arrival time was provided without a runway departure time. These fields must be provided in pairs.
ERR313	RUNWAY ARRIVAL TIME MISSING.	A runway departure time was provided without a runway arrival time. These fields must be provided in pairs.
ERR314	GATE DEPARTURE TIME MISSING	A gate arrival time was provided without a gate departure time. These fields must be provided in pairs.
ERR315	GATE ARRIVAL TIME MISSING	A gate departure time was provided without a gate arrival time. These fields must be provided in pairs.
ERR316	GATE TIMES MISSING IN FC	An FC was received without the required gate departure and arrival time fields.
ERR317	INVALID TIME. USE DDHHMM	A time field contains an illegal value (e.g., date greater than 31)
ERR318	DEPARTURE TIME LATER THAN ARRIVAL TIME	A departure time cannot be later than an arrival time in a matched pair of times
ERR319	DEPARTURE TIME EQUAL TO ARRIVAL TIME	A departure time cannot be equal to an arrival time in a matched pair of times
ERR320	NOT AUTHORIZED TO UPDATE THIS FLIGHT	One of the flights in the message belongs to an airline that submitter cannot submit data for.
ERR321	DEPARTURE DATE TOO FAR IN FUTURE	The departure date is more than 1 day in the future
ERR322	ARRIVAL TIME IN PAST	Cannot create a flight arriving in the past.
ERR323	FIELD SPECIFIED MULTIPLE	A field has been defined more than once.

Code	Error Message	Corrective Action
	TIMES	
ERR324	INVALID FORMAT FOR AIRCRAFT TYPE	The aircraft type field does not match the specified syntax.
ERR325	UNKNOWN AIRCRAFT TYPE	The specified aircraft type does not exist in the TFMS database.
ERR326	FLIGHT ID TOO LONG. USE MAX 7 CHARS.	The Flight ID has 8 characters.
ERR327	LINE CONTINUATION CHARACTER MUST BE LAST FIELD.	The line continuation character must be the last field in a message. It must also stand apart from other fields.
ERR396	CANNOT SPECIFY CONTROLLED TIME.	Cannot specify CTD or CTA in an FM message submitted in an FD packet. Control times can only be specified in an FM submitted in an SS packet.
ERR397	CANNOT SPECIFY ASSIGNED ARRIVAL SLOT.	Cannot provide Arrival Slot in an FM message submitted in an FD packet. Arrival slot can only be provided in an FM submitted in an SS packet.
ERR398	INVALID CHARACTER.	An unrecognizable character was received in an FC, FM, or FX message.
ERR399	UNKNOWN SYNTAX ERROR	A totally unrecognizable message was received.
FC Error Messages		
ERR001	FLIGHT ALREADY CREATED. USE FM	An FC has already been received for this flight; you must use an FM to modify it.
ERR002	FLIGHT HAS BEEN COMPLETED	Cannot create a flight that has already flown.
ERR003	FOUND COMPLETED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR004	FOUND COMPLETED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR005	FOUND ACTIVE FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR006	FOUND ACTIVE FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR007	FOUND FILED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR008	FOUND FILED FLIGHT WITH	Flight identification is ambiguous because

Code	Error Message	Corrective Action
	OTHER ARRIVAL AIRPORT	data partially matches an existing flight record. Message is rejected.
ERR009	FOUND CONTROLLED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR010	FOUND CONTROLLED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR011	FOUND AIRL.CREATED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR012	FOUND AIRL.CREATED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR463	REPLACE FAILED TO UPDATE FLIGHT ENTRY	An FC was received for an existing flight but the flight record could not be updated. Message is rejected.
ERR464	FAILED TO ADD NEW FLIGHT ENTRY	A new flight record could not be created in the flight database.
ERR465	A8 AND A9 FIELDS CAN ONLY BE SENT ON FC	An FM or FX message was received that contained A8 and A9 fields. Those fields are only valid on an FC message.
ERR466	A8 FIELD CANNOT BE SENT WITHOUT A9	The FC message must have both the A8 and A9 fields or neither.
ERR467	A9 FIELD CANNOT BE SENT WITHOUT A8	The FC message must have both the A8 and A9 fields or neither.
ERR469	NO MATCHING DIVERTED FLIGHT	An FC message with A8 and A9 fields was received but the diverted flight specified by those fields was not found in the database.
ERR470	NEW FLIGHT ALREADY CREATED, RECEIVED A8/A9, USE FM	When an FC message has the A8/A9 fields, the flight ID must be for a new flight. This message indicates that the flight already existed. Use an FM message to modify the times of the flight.
FM Error Messages		
ERR101	FLIGHT HAS BEEN COMPLETED	Cannot modify data fields other than the actual departure and arrival times after a flight has been completed.
ERR102	FLIGHT CANCELLED IN NAS. FILE FLIGHT PLAN	A NAS message has cancelled the flight. An FZ will re-instate the flight.
ERR103	FLIGHT AIRLINE CANCELLED. USE FC	An FX has been received for this flight. Can re-instate only be sending an FC.
ERR104	FLIGHT CANCELLED. USE FC	This flight has been canceled by a message

Code	Error Message	Corrective Action
		other than an FX or a NAS message. Can re-instate only by sending an FC.
ERR105	FLIGHT TIMED OUT. MODIFY DEPARTURE TIME	The flight has been time out canceled. Can re-instate it by sending an FM with new departure times.
ERR106	USE FX AND FC TO DIVERT FLIGHT BEFORE DEPARTURE	To divert a flight before it has departed, must first cancel it and submit an FC with the new arrival airport.
ERR108	FOUND COMPLETED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR109	FOUND COMPLETED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR110	FOUND ACTIVE FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR111	FOUND ACTIVE FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR112	FOUND FILED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR113	FOUND FILED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR114	FOUND CONTROLLED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR115	FOUND CONTROLLED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR116	FOUND AIRL.CREATED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR117	FOUND AIRL.CREATED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected
ERR120	CANNOT MODIFY ASSIGNED ARRIVAL SLOT	Cannot modify the assigned arrival slot in an FD packet.
ERR121	CANNOT MODIFY CONTROLLED DEPARTURE TIME.	Cannot modify the controlled departure time in an FD packet.
ERR122	CANNOT MODIFY CONTROLLED	Cannot modify the controlled arrival time in

Code	Error Message	Corrective Action
	ARRIVAL TIME.	an FD packet.
ERR123	FLIGHT NOT FOUND. PROVIDE GATE TIMES TO CREATE.	The flight does not already exist. Note - TFMS would have created it if the gate departure and arrival times had been provided on the FM.
ERR124	FLIGHT NOT FOUND. PROVIDE AIRCRAFT TYPE TO CREATE	The flight does not already exist. Note - TFMS would have created it if aircraft type had been provided on the FM.
ERR125	FLIGHT NOT FOUND. PROVIDE AIRCRAFT TYPE AND GATE TIMES TO CREATE.	The flight does not already exist. Note - TFMS would have created it if the aircraft type and gate departure and arrival times had been provided on the FM.
ERR452	FLIGHT DOES NOT EXIST. FLIGHT-ID COULD NOT BE CHANGED	The FM message contained a new flight-id in the A2 field. However, neither the new nor the old flight-id could be found in the database.
ERR453	SCS MESSAGE FAILED TO UPDATE FLIGHT	The flight specified on an SCS message could not be updated in the TFMS database.
ERR454	SCS MESSAGE CANNOT MATCH ANY FLIGHT ENTRY	The flight specified on an SCS message does not exist in the TFMS database.
ERR455	DIVERSION RECOVERY FAILED TO UPDATE FLIGHT ENTRY	TFMS has assumed that an FM message is updating the recovery leg of a diverted flight, but the update has failed.
ERR456	DIVERSION RECOVERY FAILED TO ADD FLIGHT ENTRY	TFMS has assumed that an FM message is creating the recovery leg of a diverted flight, but the creation has failed.
ERR457	DIVERSION RECOVERY MESSAGE FOR ACTIVE FLIGHT NOT PROCESSED	The FM message for the recovery leg of an active flight has failed.
ERR458	FLIGHT-ID CHANGE ONE-TO-ONE MATCH FAILED TO UPDATE FLIGHT ENTRY	The flight specified with the A8 and A9 fields could not be updated in the TFMS database.
ERR459	FLIGHT-ID CHANGE MULTIPLE MATCH FAILED TO UPDATE FLIGHT ENTRY	The flight specified with the A8 and A9 fields could not be updated in the TFMS database.
ERR460	REPLACE FDB ENTRY FAILED	The update to an existing flight in the TFMS database failed.
ERR461	ADD NEW FLIGHT ENTRY FAILED	The attempt to create a new flight record in the TFMS database failed.
ERR462	FMSS MESSAGE CANNOT MATCH ANY FLIGHT ENTRY	A flight in a substitution request could not be found in the TFMS database
FX Error Messages		
ERR203	FLIGHT HAS BEEN COMPLETED	Cannot cancel a flight that has already flown.

Code	Error Message	Corrective Action
ERR204	FLIGHT IS ACTIVE	Cannot cancel a flight that is already in the air.
ERR205	FOUND COMPLETED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR206	FOUND COMPLETED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR207	FOUND ACTIVE FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR208	FOUND ACTIVE FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR209	FOUND FILED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR210	FOUND FILED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR211	FOUND CONTROLLED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR212	FOUND CONTROLLED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR213	FOUND AIRL.CREATED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR214	FOUND AIRL.CREATED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR215	FOUND SCHEDULED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR216	FOUND SCHEDULED FLIGHT WITH OTHER ARRIVAL AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR217	FOUND CANCELLED FLIGHT WITH OTHER DEPARTURE AIRPORT	Flight identification is ambiguous because data partially matches an existing flight record. Message is rejected.
ERR218	FOUND CANCELLED FLIGHT WITH OTHER ARRIVAL	Flight identification is ambiguous because data partially matches an existing flight

Code	Error Message	Corrective Action
	AIRPORT	record. Message is rejected.
Early Intent Error Messages		
ERROR413	INVALID MESSAGE TYPE FOR EI PACKET. USE FP.	FP is the only legal message type for an Early Intent packet.
ERROR471	CRUISING SPEED MISSING	The cruising speed is missing from the FP message.
ERROR472	AIRCRAFT TYPE MISSING	The aircraft type is missing.
ERROR473	DEPARTURE AIRPORT MISSING	The departure airport is missing from the FP message.
ERROR474	ARRIVAL AIRPORT MISSING	The arrival airport is missing from the FP message.
ERROR475	DEPARTURE TIME MISSING	The proposed departure time is missing from the FP message.
ERROR476	COORDINATION FIX MISSING	The coordination fix, or departure airport, is missing from the FP message.
ERROR477	ALTITUDE MISSING	The requested altitude is missing from the FP message.
ERROR478	ROUTE SYNTAX ERROR	An error was found in the route portion of the FP message.
ERROR479	FLIGHT PLAN ALREADY PROCESSED	A flight plan already exists for the flight in the TFMS database.
ERROR480	FLIGHT ACTIVE	The flight specified in the FP message is already flying.
ERROR481	FLIGHT COMPLETED	The flight specified in the FP message has already landed.
ERROR482	ETD OUT OF RANGE	The departure time on the FP message does not match that of the flight entry already in the database.
ERROR483	TFMS DATABASE ERROR.	The flight specified in the FP message could not be updated in the TFMS database.
ERROR484	FP MESSAGE CANNOT MATCH ANY FDB ENTRY	The specified flight in the FP message does not exist in the TFMS database.
Simplified Substitution and Slot Credit Substitution Error Messages		
ERR412	ILLEGAL HOLD FLAG VALUE: USE R OR H	Valid values for Hold Flag are: • H - hold slot • R - release slot.
ERR414	NOT AUTHORIZED TO SUB FOR THESE FLIGHTS	At least one flight in this packet belongs to a carrier for which the sender is not authorized to make substitutions at this airport. Sender must be authorized to submit substitutions for all flights referenced in an SS packet.

Code	Error Message	Corrective Action
ERR415	CANNOT CANCEL A NON-CONTROLLED FLIGHT	An FX message submitted in an SS packet must pertain to a controlled flight. A non-controlled flight may only be cancelled in an FD packet. Note - The most common cause for this error is an incorrect flight ID, origin, destination, or original gate departure date and time.
ERR417	CTA NOT WITHIN 20-MINUTE WINDOW	CTA must be no earlier than the slot time for the flight's assigned slot, and no more than 20 minutes later than the slot time.
ERR418	CANNOT SUB INTO SLOT NOT OWNED BY THIS CARRIER	The FM message references a slot that does not currently belong to the sending airline or one of its authorized affiliates.
ERR419	CANNOT SUB TWO FLIGHTS IN ONE SLOT	Packet contains FM messages that assign more than one flight to the same slot. Only one flight may be assigned to a slot.
ERR420	CANNOT SUB ONE FLIGHT IN TWO SLOTS	Packet contains FM messages that assign a flight to more than one slot. A flight may be assigned to only one slot.
ERR421	CANNOT SUB A NON-CONTROLLED FLIGHT	Cannot use an FM message to assign a flight to a slot if the flight does not already have a slot assignment. This message is generated if the flight referenced in an FM does not exist in the TFMS flight database, or if it exists but is not currently controlled. Note - The most common cause for this error is an incorrect flight ID, origin, destination, or original gate departure date and time.
ERR422	CANNOT CONTROL FLIGHT SCHEDULED TO ARRIVE DURING GDP	An SC message can be used to create a slot and assign it to a flight only if the flight is scheduled to arrive after the GDP end time is over.
ERR423	SLOT NOT OWNED BY FLIGHT IN THIS PACKET	In order to preserve the one-flight-one-slot rule, every slot that is assigned in an SS packet must be assigned to another flight in that packet prior to the packet being processed.
ERR424	CANNOT SUB INTO SLOT OCCUPIED BY FORMER POP-UP FLIGHT	Flight cannot be assigned to an earlier slot if the flight currently assigned to that slot was formerly a pop-up.
ERR425	AIRPORT NOT CONTROLLED	A HOLD ALL SLOTS or RELEASE ALL SLOTS message was received for an airport that does not currently have a GDP.
ERR426	CANNOT CHANGE HOLD FLAG FOR NON-CANCELLED FLIGHT	Cannot modify hold flag for flight that does not have an assigned slot in a GDP. Note -

Code	Error Message	Corrective Action
		The most common cause for this error is an incorrect flight ID, origin, destination, or original gate departure date and time.
ERR427	CANNOT SUB POP-UP FLIGHT	Cannot assign a pop-up flight to a slot. Only a revision may assign a pop-up to a slot, after which the flight is referred to as a former pop-up.
ERR428	CONTROL INFO MISSING. SPECIFY: DEP.TIME, ARR.TIME, AND SLOT	CTD, CTA, and ASLOT fields are required in an FM message submitted in an SS packet.
ERR429	SLOT TIME CANNOT BE IN THE PAST	A flight cannot be assigned to a slot whose slot time is earlier than the current time.
ERR430	CANNOT SUB COMPLETED FLIGHT	Cannot modify slot assignment for a completed flight.
ERR431	CANNOT SUB MULTIPLE AIRPORTS	All messages in an SS packet must pertain to flights arriving at the same airport.
ERR432	CANNOT SEND FC MESSAGE IN SS PACKET	Flights cannot be created in an SS packet. An FC message may only be submitted in an FD packet.
ERR433	SC CAN BE SENT ONLY IN SS PACKET	Slots cannot be created in an FD packet. An SC message may only be submitted in an SS packet.
ERR434	CANNOT CREATE SLOT FOR CONTROLLED FLIGHT	Flight referenced in SC message is already controlled. Cannot use SC message to create a slot and assign a flight to the newly created slot if the flight already has an assigned slot or an FA Delay.
ERR435	SLOT ALREADY EXISTS	The slot value provided in SC message already exists. A newly created slot must have a unique slot identifier. An airline can generally create a unique identifier by changing the suffix letter in the slot name.
ERR436	INVALID MESSAGE TYPE FOR SS PACKET. USE FM/FX/SCS/HOLD ALL SLOTS/RELEASE ALL SLOTS	Only FM, FX, SCS, HOLD ALL SLOTS or RELEASE ALL SLOTS are valid within an SS packet.
ERR437	SLOT IN SC MSG CANNOT BE DURING CURRENT GDP	Slot time for newly created slot falls in the current GDP timeframe. For an airline to create a slot, the slot time portion of the "Assigned Arrival Slot" field in the SC message must specify a time that is after the GDP is over.
ERR438	CANNOT SUB REMOVED FLIGHT	The flight has been removed by the FAA and is not available for subbing.

Code	Error Message	Corrective Action
ERR439	ETE CANNOT BE CHANGED BY MORE THAN 50%	The new ETE, derived by subtracting CTD from CTA, cannot change from the prior ETE by more than 45 minutes or 50% of the prior ETE, whichever is greater.
ERR440	SUB PROCESSING IS OFF	Command Center is currently not accepting substitution messages pertaining to this GDP. TFMS sends a TFMS SUBS ON message when it resumes accepting substitution messages
ERR441	SCS CAN ONLY BE INCLUDED IN SS PACKETS	A Slot Credit Sub message can only be included in an SS packet, not in an FD or EI packet.
ERR442	SCS PROCESSING IS OFF	The FAA has turned Slot Credit Sub processing off for the airport. All SCS requests will be rejected.
ERR443	YIELDED SLOT MUST BE IN THE FUTURE	The slot that is being given up in the SCS message must be later than the current time.
ERR444	EARLIEST ACCEPTABLE TIME MUST BE LATER THAN TIME OF YIELDED SLOT	The time of the yielded slot must be earlier than the earliest acceptable time.
ERR445	EARLIEST ACCEPTABLE TIME MUST BE EARLIER THAN LATEST ACCEPTABLE TIME	The window of acceptable times must be specified as the earliest acceptable time first then the latest acceptable time.
ERR446	20-MINUTE WINDOW NOT ALLOWED WITH SCS	The substitution window size for an SCS packet must be set to 0. If any flights within the packet violate the window size the packet will be rejected.
ERR447	YIELDED SLOT OWNED BY FORMER POP-UP FLIGHT	The yielded slot must not be owned by a former pop-up.
ERR448	SCS TIME RANGES OVERLAP	The time ranges of different SCS messages within a packet must not overlap. The time range of an SCS is defined as the time from the yielded slot to the latest acceptable time.
ERR449	SLOT CREDIT SUBSTITUTION CANNOT BE FULFILLED	No bridge flights could be found that would allow the SCS flight to be moved into the requested window.
ERR450	SLOT TIME OF SCS FLIGHT IS ALREADY WITHIN WINDOW	The yielded slot of the SCS flight already falls within the requested window. No processing is required.
ERR451	SCS PROCESSING HAS BEEN DISABLED UNTIL FURTHER NOTICE	The FAA has suspended SCS processing temporarily.
ERR485	AFP SUBS ARE DISABLED	The FAA has suspended substitutions for AFP indefinitely. This is distinguished from

Code	Error Message	Corrective Action
		ERR440 as follows. ERR440 is sent when FAA has momentarily turned off subs in order to issue a revision or compression. If a user sees ERR440, they should wait a few minutes and try again. ERR485 indicates the FAA has disabled subs because they are causing a large-scale technical or procedural problem. Subs may be disabled for days or weeks in this latter case.
Warning Messages		
WARN001	DERPARTURE AIRPORT MISMATCH FOR SCHEDULED FLIGHT	An FM was received for a flight that matches a scheduled entry in all but the departure airport. The flight will be updated.
WARN002	ARRIVAL AIRPORT MISMATCH FOR SCHEDULED FLIGHT	An FM was received for a flight that matches a scheduled entry in all but the arrival airport. The flight will be updated.
WARN003	FLIGHT NOT FOUND. CREATED FLIGHT	An FM was received for a flight that didn't exist; however sufficient data was provided to allow the flight to be created.
WARN004	FLIGHT SCHEDULE CANCELLED	An FM was received for a scheduled entry that has been cancelled by an RS message. The times will be updated.
WARN006	FLIGHT NOT FOUND	An FX was received for a flight that didn't exist. The message was ignored.
WARN007	FLIGHT ALREADY AIRLINE CANCELLED	Flight identified in FX message has already been cancelled in a prior FX message.
WARN011	FC RECEIVED FOR REMOVED FLIGHT	The flight specified on the FC has been removed by the FAA. The flight entry will be updated but will stay remove cancelled.
WARN012	FM RECEIVED FOR REMOVED FLIGHT	The flight specified on the FM has been removed by the FAA. The flight entry will be updated but will stay remove cancelled.
WARN013	FX RECEIVED FOR REMOVED FLIGHT	The flight specified on the FX has been removed by the FAA. The flight entry will be updated to include the airline cancellation.
WARN014	UNKNOWN REMARKS KEYWORD	The only accepted remark in an A7 field is **DVRSN**, for diversion.
WARN015	FC – NO DIVERTED FLIGHT FOUND	An FC was received for a diverted flight but either the airport or times did not agree exactly. The flight record will be updated.

Appendix B   ADL & FSM Broadcast File Format Specifications

For content of the ADL & FSM Broadcast File Format Specifications, please refer to the CDM webpage: http://cdm.fly.faa.gov/ad/CDM-GDP_specs.htm. The latest document is version 13.1, dated November 2012

Appendix C CDM Message Protocol

There are five types of CDM message protocols.

- General CDM session Protocols

- ADL session Protocols

- Flight Data Message Protocols

- Simplified Substitution Protocols

- CTOP Message protocols

AOCNET interface utilizes all five message protocols. These protocols are detailed in the CDM Message Protocol document that is shown on the CDM webpage: http://cdm.fly.faa.gov/ad/CDM-GDP_specs.htm. The latest document is version 2.5, dated November 2012.

Appendix D Interface Control Document for CTOP

For content of the CTOP ICD, please refer to the CDM webpage:
http://cdm.fly.faa.gov/ad/CDM-GDP_specs.htm. The latest CTOP ICD is version 3.0,
dated November 2012.